THE JOURNAL
OF THE
OKLAHOMA STATE MEDICAL ASSOCIATION

VOLUME XXXIV OKLAHOMA CITY, OKLAHOMA, AUGUST, 1941 NUMBER 8

Surgical Procedures in Chronic Intestinal Obstruction*

MARVIN E. STOUT, M.D.
Polyclinic Hospital
OKLAHOMA CITY, OKLAHOMA

The onset and course of chronic intestinal obstruction may follow any one of three forms. The condition may develop silently until, wholly without warning, it passes into an acute phase as the occlusion becomes complete. In this case it cannot be differentiated clinically, from acute obstruction. This silent course is not infrequent when the cause of obstruction is carcinoma of the right half of the colon. In the second form, the onset, while not silent, is insidious, and the symptoms, slight at the beginning, are steadily progressive. In the third form, the obstruction is intermittent, with subacute attacks alternating with periods of relative or absolute freedom from symptoms.

The diagnosis of chronic obstruction is thus more difficult than that of acute obstruction with its characteristic onset and course. In its acute termination, chronic obstruction is frequently diagnosed as acute obstruction from failure to note and to properly evaluate the trivial symptoms, that have long been present: the "indigestion," mild colicky pains, "grumbling of the bowels," gradually intensifying "sluggishness of the bowels," interrupted by occasional brief attacks of diarrhea — banal symptoms for which familiarity has bred contempt in the mind of the layman.

The x-ray can be useful in diagnosis, but a negative picture cannot be depended upon to rule out intermittent or partial obstruction. The simple, or flat, x-ray film may show distention of an intestinal loop because the gas that is present serves as contrast medium. In the obstructed small intestine, fluid levels with gas caps can be visualized at times on the simple film. Extreme caution must be exercised in the use of barium sulphate. Administered by mouth or forced above an obstruction by an enema given with injudicious speed, it may convert a partial into a total obstruction. And here, it must be borne in mind, that high grade obstruction, easily convertible into total occlusion of the lumen, is compatible with great mildness of symptoms. In the small intestine and in the proximal half of the large intestine, the bowel contents are fluid, and for a long time, will continue to pass easily through a slowly developing stricture — whereas, a like impediment to passage in the distal colon or rectosigmoid, may produce serious symptoms.

In intermittent obstruction, the attacks are usually acute, or subacute. Unless the cause itself is recurrent, as recurrent intussusception, intermittent obstruction means that the lumen of the bowel is so nearly occluded that trivial temporary local conditions are enough to block it completely while the condition persists or, until increased peristalsis has forced a passage.

From the diagnostic standpoint, increased peristalsis is a particularly important phenomenon in the chronic form of intestinal obstruction. Whereas, in acute obstruction, distention thins the wall of the bowel, and the exaggerated peristalsis that is present is rarely palpable, and still more rarely visible through the abdominal wall, the long continued hyperperistalsis of chronic obstruction leads to hypertrophy of the circular muscle of the bowel and peristalsis may be both felt and seen.

Vomiting, and distention of the abdomen, may aid in locating the site of the obstruction. As a rule, the higher the obstructing lesion, the more frequent the vomiting. But vomiting must be studied in connection with the other diagnostic data or it may mislead.

*Read before the Section on General Surgery, Annual Session, Oklahoma State Medical Association, May 20, 1941, in Oklahoma City.

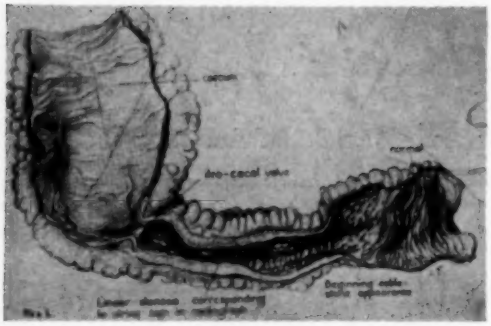


Figure 1—Ileitis: Typical x-ray findings in an advanced case with specimen removed.

In colonic obstruction, vomiting may be of reflex nature. From the contour of the distended abdomen one can usually judge with a fair degree of accuracy as to whether the obstruction is in the small or large intestine. If in the small intestine, the lower mid-abdomen is ballooned and a stepladder pattern formed by distended loops may often be seen if the obstruction is located high. In large bowel obstruction the protrusion is of the flanks and upper abdomen and the central area is relatively flat and soft.

Knowledge of the presence of a condition that is liable to produce obstruction, gives warning in advance and thus facilitates the diagnosis. But, aid from this source is seldom forthcoming, inasmuch as the obstruction is often the earliest evidence we have of the existence of the causative lesion. The most useful pointer of this sort, as regards obstruction of the small bowel, is an abdominal or pelvic operation in the past history.

Wakefield and Weber (1) state that from 70 to 75 percent of patients between 10 and 40 years of age who have mechanical obstruction of the small bowel have had previous abdominal operations.

One may also take warning from a history of peritonitis or inflammatory disease of one of the organs of the female pelvis. According to Maingot, (2) adhesive obstruction due to late post-operative or post-inflammatory adhesions is rarely of sudden onset. In any severe inflammatory or ulcerative disease of the intestines the healing processes may dangerously narrow the bowel lumen. This applies to both the large and the small bowel. By far, the most frequent cause of obstruction of the large bowel is annular carcinoma, and the stealthy progress of carcinoma, in this region, is well known.

Enough has been said to show that, although chronic obstruction of the intestine is always a late result of a pathologic process of long standing, this fact, is of little aid in establishing an early diagnosis.

It is important to diagnose chronic intestinal obstruction. First, because operation in the chronic stage or in the interval between intermittent attacks is far safer than intervention in the acute attack, and, second, because diagnosis of the obstruction is, in many cases, the indispensable first-step toward diagnosis of the causative lesion.

Treatment of the obstruction is not an emergency matter, as in the case of acute obstruction. Nevertheless, since it is impossible to judge, with any accuracy, the grade of the obstruction or of the intestinal distention from the clinical picture, one cannot know how close the patient may be to the acute stage, or to strangulation. Therefore, while one should take time to study the case and plan treatment intelligently, mere procrastination is not in order.

The first thought in treatment of chronic obstruction is the same as in acute obstruction — relief of the distention of the bowel. Some degree of distention is probably present, and it is important to remember that high grade intestinal distention, especially of the colon, may exist without noticeable distention of the abdominal wall. The train of grave systemic evils that result from the factor of intestinal distention alone is well known and will not be insisted on here. But it cannot be too often insisted that an extensive operation in the presence of any degree whatsoever of intestinal distention is dangerous. Enormous distention may exist with an almost symptomless carcinoma of the colon. With any considerable degree of obstruction, David (3) warns, even a side-tracking operation is not advisable.

Figure 2—Epiploitis: X-ray, showing narrowing of the bowel from inflamatory lesion.

Figure 3—X-ray showing perfect recovery, one year following cecostomy.

Hand in hand with relief of distention, as preparation for such radical surgery as may be required, should go the rehabilitation of the patient. Dehydration, anemia, demineralization, are all probably present and must be combated by the appropriate measures. Since we are dealing, in chronic cases, with simple, incomplete obstruction, there is a good prospect of relieving distention of the small bowel by Wagensteen's technic of suction-siphonage, or the Miller-Abbott tube.

Non-surgical methods of decompression of the large intestine, such as repeated warm enemas, heat to abdomen, and mineral oil by mouth, will sometimes succeed in low grade obstruction, but in high grade obstruction reliance on such measures is extremely hazardous.

The surgical means of relieving distention is enterostomy, and should be advised in the more sereve cases when not relieved by suction-siphonage. Enterostomy is best done under local anaesthesia. It puts relatively little strain upon the patient. But it is not entirely without danger, chiefly the danger of peritonitis or abdominal wall infection from leakage from placing the tube or sutures in an over-distended bowel wall. To reduce this danger to a minimum, isolate the segment of bowel with intestinal clamps and aspirate all gas and liquid contents, using a large lumen hypo needle, before placing the sutures and introducing the tube.

No general exploration should be made — no attack on the obstruction attempted. Select the first distended loop of bowel that presents itself. The entire procedure should be carried on as gently and non-traumatizing as possible. It is necessary to assure continuance of peristalsis, lest the enterostomy fail of its purpose. And for this, morphine is indispensible because it acts to maintain the tone of the bowel muscle. Pituitrin and all purgative remedies must be used with great caution, and never while the obstruction exists.

Oxygen as an adjunct in the treatment of obstruction is recommended on two specific grounds: first, that with intestinal distention and the resulting changes in the chemical composition of blood, the vital capacity of the lungs, and the oxygen carrying capacity of the blood is impaired; second, that oxygen increases the absorption rate of gas within the bowel.

Between the decompression and the operation for removal of the obstructing lesion, a sufficient interval must be allowed for recovery of the bowel wall, as well as for improvement in the patient's general condition. The condition of the bowel wall is important to the success of an anastomosis. If the cause of the obstruction is not already known, a systematic exploration is then carried out. Long standing and extensive adhesion constricting or kinking of the small intestine may require entero-anastomosis between free loops. It is, above all things, necessary to enter on the exploration with an open mind and to be prepared to deal with unexpected conditions. Congenital anomalies resulting in partial obstruction may come to the operating table late in life, if not recognized and dealt with in childhood. Such are most likely to be seen in the upper small intestines and in the rectum. Regional ileitis is said to be the most important of the intrinsic occlusive lesions of the small intestines. Right

hemicolectomy, as for cancer of the cecum, is said by Maingot to restore survivors to perfect health and function, but the mortality rate is 15 per cent. In obstructive cases that will not permit radical resection, a measure of relief is offered by anastomosising the healthy part of the ileum to the transverse colon, to relieve the obstruction and divert the bowel contents away from the diseased area until such time as a resection may be accomplished with greater safety. Meckel's diverticulum is another well recognized cause of obstruction of the ileum. It should be removed surgically, by a technic similar to that of an appendectomy, if the opening into the ileum is small; by incision of the base and transverse suture, if wide.

Organic narrowing of the lumen of the large bowel as a sequel of severe inflammatory or ulcerative disease requires an artificial anus, ileostomy or colostomy according to the portion of the bowel affected, which may or may not have to be permanent, depending on the reaction of the changes in the bowel wall when the latter is put at rest.

The chief cause of chronic intestinal obstruction is carcinoma of the large bowel. To discuss adequately the surgery of this condition, with evaluation of the different technics in use today, would require a day's symposium. It appears obvious that no one method is best for all cases and that the surgeon should select the method best suited to the individual case. On the other hand, since opportunity for experience is, at best, limited, no individual surgeon can attain equal skill in all technics, and an important element of safety for the patient must always be the operator's familiarity with the technic used. This narrows the choice of operation for the individual surgeon. For the average case of carcinoma of the colon, especially the descending colon, Mikulicz' operation is still generally considered the safest and, therefore, the best. It has been found possible to adapt this operation for use in all segments of the colon. This operation utilizes the principles of operating in stages, in exteriorization, the "double-barreled shotgun" pressure necrosis to convert afferent and efferent loops into a single cloaca after resection of the tumor bearing segment, and final restoration of the fecal stream. For carcinoma of the cecum or ascending colon, removal of the lower six inches of the ileum, the ascending colon and about one-third of the transverse colon by an immediate one stage resection with side-to-side anastomosis, has proved a generally satisfactory technique, but even here the Mikulicz technique is not without its advocates.

Figure 4—Mucoid carcinoma right half of colon. Chronic obstruction, (almost complete). All symptoms suggestive of stomach lesion.

BIBLIOGRAPHY

1. Wakefield and Weber: Clinical Differential Diagnosis of Diseases of the Intestines. Surg. Cl. N.A. 17: 1013, August, 1937.
2. Maingot, Rodney: Abdominal Operations. Vol. 2: D. Appleton-Century Co., N. Y. 1940.
3. David, Vernon C.: Chronic Intestinal Obstruction Due to Lesion of the Larger Bowel. Industrial Medicine 5: 601, December, 1936.

DISCUSSION

V. H. MUSICK, M.D.
OKLAHOMA CITY, OKLAHOMA

Mr. Chairman, members of the Oklahoma State Medical Association, I have enjoyed very much Doctor Stout's discussion on chronic intestinal obstruction.

His practical view of the limitation of diagnosis of small bowel lesions and his superb handling of the surgical procedures was excellent.

I wish to emphasize in the discussion two major points in the diagnosis and treatment of chronic small bowel obstruction: first, the roentgenological changes in the mucosal relief pattern, and second, the chemical changes in the blood as the obstruction reaches the acute stage.

For a great many years, the x-ray of segments of the gastro-intestinal tract other than the small bowel has been improved upon until now the esophagus, stomach, and colon work is fairly accurate. The small bowel, however, has been neglected. It is only now, that we are beginning to learn a little of the normal and pathological appearance of the small bowel as displayed on

x-ray. The reason for this lethargy is two-fold, first, because the x-ray of the small bowel is tedious, painstaking, and time consuming; second, the small bowel is rarely attacked by disease.

The technique of small intestinal x-ray studies is as follows: The patient is given a barium mixture by mouth and the contents of the stomach rapidly evacuated by pressure. Several inches of jejunum can be inspected on fluroscopy, noting any changes in the lumen, stiffening or changes in the mucosal pattern. In 30 minutes another segment may be seen on fluroscopy or by plate. If a painstaking examination is desired it may be necessary to fluroscope or take a plate every 30 minutes. A meal at the end of an hour may stimulate peristolic activity so that the entire small intestine may be examined in a comparatively short time.

The terminal ileum is best seen by administration of barium by enemata and the forcible expulsion of the cecal contents retrograde through the ileocecal valve.

Plates taken 8 to 24 hours after barium by mouth may show isolated loops of bowel, while a plain flat plate taken on an empty stomach may show the typical step-ladder appearance of complete small bowel obstruction.

Definite signs of obstruction, such as the last two mentioned, are rarely seen because intestinal lesions are usually encircling growths that do not ulcerate deeply or are due to adhesions which are difficult to demonstrate. Localized, sharply defined narrowing with ballooning of the proximal segments may be seen.

Some times a palpable tumor may be felt over a narrow, stiffened area. Defects showing the sharply defined border may be a constant finding on all plates.

If intussusception occurs at the tumor site, it may be demonstrated by x-ray, by seeing the small bowel invaginated into the distal segment or through the ileo-cecal valve.

Benign tumors are rare and are usually pedunculated and hardly ever cause complete obstruction. Intramural myomas, fibromas or adenomas present themselves as half mooned shaped defects, projecting into the intestinal lumen. Adhesions are as a rule encircling and usually found only on exploratory operation.

Carcinomas are rare and when they do occur are usually mucoid in character. They present the same sharply defined x-ray characteristics as the benign tumors.

Sarcomas are even less prevalent in the small intestine than carcinoma. The most common type is the liomyosarcoma.

The chronic inflammatory types of obstruction caused by tuberculous infection, amoeba, regional idiopathic ileitis or other inflammations due to micro-organisms or parasites, are relatively rare, but of enough importance to mention. They exemplify themselves on x-ray by cord-like narrowing, stiffening and destruction of the normal mucosal pattern of a considerable segment of bowel. The proximal segment may be dilated. Tuberculous enteritis may be differentiated by finding tubercle bacilli either in the feces or by demonstrating it by x-ray either in the kidney or lung. The only other way I know of to differentiate tuberculous enteritis from regional ileitis is the corrugated appearance of tuberculous enteritis while regional and amoebic ileitis give a more smooth appearance.

The second point of importance in the diagnosis of small bowel obstruction has to do with changes in the chemistry in the blood serum as the obstruction nears completion.

It should be remembered that the symptoms of high intestinal obstructions are more severe and acute in nature than those of lower obstructions. This is partly explained by changes in the acid base equilibrium due to water loss through vomiting. The loss of chlorides and sodium usually parallels the loss of extracellular fluids. This is followed by a breakdown in the compensatory mechanism through more loss of fluids and electrolytes through vomiting.

Dehydration may cause:

1. Reduction in the plasma volume.
2. Increased R.B.C. and hematocrit reading.
3. Increase in blood protein.
4. Increase in Non-protein-nitrogen.
5. Reduction of oxygen in venous blood.

Loss of sodium and chloride may cause:

1. Reduction of chlorides in the serum.
2. Reduction of total base.

It is therefore essential if one expects a complete obstruction to note the following:

1. Serum chlorides.
2. CO2 combining power.
3. Non-protein-nitrogen.

Normal chlorides are about 370. These may be reduced to 80 percent of normal. Normal values for CO2 combining power are 50-160 volume percent. This may be increased as much as 100 volumes percent. Non-protein-nitrogen values of 200 or more are not uncommon.

To summarize, small intestinal obstructions are relatively rare and difficult to diagnose. Advances are being made in x-ray examination of the small bowel and may be helpful in the diagnosis.

Blood chemical changes in the chlorides, CO2 combining power, and non-protein-nitrogen are helpful in the diagnosis and treatment of complete obstructions.

Appendicitis In St. John's Hospital

E. O. JOHNSON, M.D.
TULSA, OKLAHOMA

Numerous maps (10) of the United States illustrating geographic distribution of the appendicitis death rate show that the highest death rates occur in two regions, the Rocky Mountain and the Central Plains regions, especially Montana, Idaho, Wyoming, Nevada, Utah and Colorado. Inasmuch as Oklahoma borders on these two regions, and has a lower mortality rate than three other neighboring states, according to these investigators, it was decided that an investigation of the records of a hospital in Oklahoma might be of interest. Also, it was considered that a review of appendicitis in the years previous to the general use of the sulfonamide compounds might be of value in a comparison with a later study.

GENERAL DATA

The data of this report of 3,135 clinical cases in which a diagnosis of appendicitis was made, or the appendix was removed (prophylactically during the course of other operations) is taken from the admissions to St. John's Hospital, Tulsa, Oklahoma, from January, 1927 to January, 1937, and represents the work of about 90 different surgeons whose training was received in approximately 35 different medical schools. However, 64 percent of these cases, or 2,009 cases, were cared for by only ten surgeons. Twenty-one physicians cared for only one each, and 54 surgeons had less than ten cases each. Although St. John's Hospital has the approval of the A. M. A. for internship and is an accredited hospital by the American Hospital Association and the American College of Surgeons, the period over which this study was made represents its most formative years. The hospital first opened in 1926, and did not have a full time pathologist until 1928.

In reviewing the hospital records an attempt was made to classify them as simply and accurately as possible, using the same classification others have used and which was more recently emphasized by F. G. Connell (Table II). They were divided into two general classes: acute and chronic. The acute were further divided into: simple acute, gangrenous, perforated without abscess formation, and perforated with abscess formation. The chronic cases were not subdivided in this report except to differentiate between the incidental or prophylactic appendectomies. All cases with the diagnosis of subacute appendicitis not definitely acute were listed with the chronic, making the acute cases very carefully selected. In all cases the following notes were made from the records: name of attending physician, the hospital number, age, sex, duration of illness since onset, the ingestion of a cathartic, previous attack, pain, nausea, vomiting, diarrhea, constipation, admitting pulse, admitting temperature, tenderness, muscle spasm, abdominal rigidity, mass, vaginal examination, rectal examination, leucocyte count, poly count, pathological report, incision used at operation, drain, hospital days, complications, mortality, and type of anesthetic.

Yearly admissions of all types of appendicitis (Table III) show a variation from the lowest of 130 cases in 1926, the first year the hospital opened, to the highest of 435 cases in 1936, with a yearly average of 313.5 cases, over the ten year period studied. Over this period the yearly average admissions for acute cases was 135, and for chronic cases including all incidental appendectomies, was 178.3. The yearly admission according to sex is listed in Table IV.

Of the 3,135 cases reviewed (Table II), 1,955 cases or 43.2 percent were acute; 1,765 cases, or 56.2 percent, were chronic (806 cases or 25.3 percent were chronic and 959 or 30.5 percent were appendectomies at the time of other operations, some of which were subacute and chronic but were not clearly defined); three cases, or 0.09 percent, were tuberculosis; five cases, or 0.15 percent, were mucoceles; two cases, or 0.06 percent were mycotic; three cases, or 0.09 percent, were amebic; one case, or 0.03 percent, was carcinoid, and one case, or 0.03 percent was leiomyomotous.

The average age of 3,051 cases of acute and chronic appendicitis including incidental appendectomies was 29 years. In 84 cases the age was not recorded.

Of the 3,135 cases studied there were 1,181 males and 1,942 females, with no record of the sex in 12 instances.

Further data will be taken up under the various types of appendicitis.

ACUTE APPENDICITIS

Of the 1,355 cases of acute appendicitis (all types) 772, or 56.9 percent were males, and 573, or 42.2 percent were females. The sex was not recorded in ten cases, or 0.7 plus percent.

The relation of sex to the type of acute appendicitis (Table VI) was studied and found to be as follows: Of 774 cases of simple acute appendicitis 409, or 52.8 percent were males and 365, or 47.2 percent were females; of 255 cases of gangrenous appendicitis 159, or 62.3 percent were males, and 96, or 37.7 percent were females; of 179 cases of perforated appendicitis without abscess 116, or 64.8 percent were males, and 63 or 35.2 percent were females; of 123 cases of perforated appendicitis with abscess formation 70, or 56.9 percent were males, and 53, or 43.1 percent were females. It was not possible to classify accurately 14 cases into the exact type of acute appendicitis.

There were 54 deaths among the 772 male patients who had some type of acute appendicitis, or a mortality rate for males of 6.9 percent; 42 deaths occurred in 573 female patients with some type of acute appendicitis, giving a mortality rate for females of 7.0 percent (See Table V).

Deaths from gangrenous, perforated, with and without abscess formation seemed to occur more frequently in males. Deaths from simple acute appendicitis occurred more frequently in females.

AGE (11, 12, 15, 16, 17, 18, 29)

The average age for 1,286 acute cases of appendicitis (all types) was 25.5 years, the youngest being 18 months and the oldest 78 years of age. The youngest had a simple acute appendicitis, was operated upon and lived, while the oldest had a perforated appendix and died 13 days postoperatively. Two-thirds (61.1 percent) of all acute cases of appendicitis occurred in patients between the ages of ten and thirty years, the highest incidence being in the 20 to 30 years age group (Table VII). It occurs more frequently between the ages of 30 to 40 years than in the first ten years of life. There were 23 cases in patients 60 years of age or older, which gives an incidence of occurrence at this age of 1.7 percent.

The incidence of appendicitis in age groups of ten years is as follows: 95 cases, or 7.3 percent occurred between the age of birth and ten years; 365 cases, or 28.3 percent in the 10 to 20 year age group; 419 cases, or 32.5 percent in 20 to 30 year group; 219 cases, or 17.0 percent in the 30 to 40 year group; 109 cases, or 8.4 percent in 40 to 50 year group; 53 cases, or 4.1 percent in 50 to 60 year group; 19 cases, or 1.4 percent in 60 to 70 year group; and seven cases, or 0.54 percent in 70 to 80 year group.

PREVIOUS ATTACKS (16)

Out of 1,355 cases of acute appendicitis there were 243 cases, or 17 percent which were definitely the first attack. Of these 243 cases with the first attack of appendicitis,

TABLE II

Classification of Appendicitis in St. John's Hospital, Tulsa, Oklahoma From January 1, 1927 to January 1, 1937.

Type of Case	No. of Cases	Percentage of Cases	No. of Deaths	Uncorrected Mortality Percentage	Corrected Percentage
Acute	1355	43.2	96	7.08	6.49
Simple Acute	807	25.7	19	2.35	2.23
Gangrenous	246	8.1	11	4.87	4.87
Perforated with Abscess Formation	120	3.8	20	16.66	15.83
Perforated	182	5.8	46	25.27	23.07
Chronic (including all appendices removed at time of other operations)	1765	56.2	10	0.56	0.50
Chronic appendicitis only	806	25.3	1	0.12	0.12
Appendectomies (at time of other operations)	959	30.5	19	0.93	0.93
Leiomyomatous appendix	1	0.03	0	0	0
Mucocele	5	0.15	0	0	0
Tuberculosis	3	0.09	0	0	0
Mycotic	2	0.06	0	0	0
Amebic (parasitic)	3	0.09	0	0	0
Carcinoid	1	0.03	0	0	0
Totals	3135	100.00	106	3.38	3.09

20 died, giving a mortality rate of 8.2 percent which is higher than the over all mortality rate of 6.5 percent for all acute cases. 486 cases, or 35 percent of the 1,355 acute cases had had one or more previous attacks before admission. In somewhat less than half the cases there was no record of whether the patient had a previous similar attack or not.

The average number of hospital days was 13.2 days in 454 cases who had previous similar attacks and survived their present one. The average number of days in the hospital of 223 cases which came to the hospital with their first attack and survived was 13.6 days. Both of these figures compare closely with 13.0 days, the average number of hospital days for all acute cases which included those cases which were fatal.

TABLE III

Yearly Admission of All Types of Appendicitis
St. John's Hospital

Year	All Types Of Appendicitis	Acute	Chronic: Including Incidental Appendectomies
1927	130	61	69
1928	301	137	164
1929	291	174	117
1930	369	172	197
1931	329	159	170
1932	190	92	98
1933	345	134	211
1934	360	149	214
1935	385	132	253
1936	435	145	290
Yearly Average	313.5	135.5	178.3

Of the 133 cases of appendiceal abscesses, 31 cases or 23.3 percent were the first attack, and 30 cases, or 22.7 percent had had one or more attacks. One could not tell by the record in 72 cases whether the patient had had any previous attacks.

Of the 182 cases of appendicitis which had perforated without abscess formation 60 cases, or 32.9 percent had had previous attacks, and 42 cases, or 23.0 percent came into the hospital with appendiceal abscess and their first attack of appendicitis. There was no record of whether or not the remaining 80 cases had previous attacks.

DURATION (14, 16, 31, 32, 33)

The average elapsed time in days between the onset of the acute attack and admission to the hospital is shown in Table VIII. The average number of days from the onset to the time of admission to the hospital for all acute cases was 2.9 days; for all simple acute cases 2.3 days; for all gangrenous cases 2.2 days; for all perforated cases with abscess formation 7.4 days; and for all perforated without abscess formation 4.3 days.

Two hundred twenty-four cases, or 16.5 percent of the 1,355 acute cases had had appendicitis for more than three days duration before coming to the hospital. Of this number, there were 44 deaths, giving a mortality rate of 17.4 percent, whereas the mortality rate for those patients coming to the hospital before three days had elapsed after the beginning of their attack, was only 4.6 percent.

Forty-four cases, or 45 percent, of all the

TABLE IV

Yearly Admission of Appendicitis According to Sex
**St. John's Hospital*

Year	Acute Male	Acute Female	Chronic* Male	Chronic* Female
1936	81	64	52	239
1935	73	59	55	198
1934	86	63	23	188
1933	80	52	37	174
1932	57	35	36	62
1931	91	66	42	128
1930	100	71	49	146
1929	92	77	44	73
1928	71	66	42	122
1927	41	20	29	39
	772	573	409	1369

* Includes incidental appendectomies and all other types outside of acute, such as mucocele, mycotic, etc.

TABLE V

Deaths According to Age Groups and Types of Appendicitis
St. John's Hospital (1,355 *Cases*)

Age Groups	Simple Acute	Gangrenous	Perforated Without Abscess	Perforated Abscess
0-10	2	0	6	2
10-20	2	4	9	3
20-30	10	1	4	2
30-40	3	1	10	4
40-50	1	2	6	2
50-60	1	1	4	3
60-70	0	1	3	2
70-80	0	0	2	1
Totals	19	10*	44	19

* Age not recorded in 2 cases.

Acute Fatal Cases and Sex

Sex	Total Cases	Number of Fatal Cases	Mortality %
Male	772	54	6.9
Female	573	42	7.3
Total	1345	96	7.0+

* Sex not recorded in ten cases.

deaths among the acute cases of appendicitis were in this group of 224 cases who had their appendicitis for longer than three days duration before coming to the hospital.

CATHARTICS (14, 31, 32, 33, 34, 35)

There were 249 cases out of 1,355 patients in which a cathartic had been taken after the onset of the attack of appendicitis, giving an incidence of 18.3 percent. Of these 249 cases, 56 were perforated, and 33 were perforated with abscess formation. Among these 249 cases there were 25 deaths, or a mortality rate of 10.0 percent. The deaths that fall in this group account for 26 percent of the total number of deaths for all acute cases. A total of 26 cases had enemata after the onset of their attack, and in 47 instances no cathartic had been taken at all. In the remaining 1,033 cases no record was made on the chart whether a cathartic had been taken or not.

The average hospital days for 244 of the patients who took a laxative was 15.0 days, which is higher than the average of 13.0 days for all 1,355 acute cases. One third, (81), of these 244 cases remained longer than the average of 15 days, the highest being 82 days.

TYPICAL SYMPTOMS (14, 16, 33)
(*Pain, Nausea, and Vomiting*)

The symptoms of pain in abdomen, nausea, and vomiting were checked on each record in the acute cases. 791 cases, or 58.4 percent had these symptoms in their typical sequence. Eight percent of the acute cases had the pain and nausea without any vomiting. The remainder had at least one of the above symptoms, and some had all these but the sequence was atypical.

Pain was the most constant symptom, being present in every case except two. In these two cases there was nausea and vomiting. In 18 cases there was no mention of pain in the record. Sixty-four, or two-thirds, of the 96 cases who died had a typical onset and sequence of the symptoms of abdominal pain, nausea and vomiting.

Nausea is the second most frequent symptom, being present in 72 percent of all cases.

PHYSICAL EXAMINATION (14, 16, 34, 35)
(*Admitting Pulse and Temperature*)

The average admitting temperature for all types of acute appendicitis was 99.8 degrees F. The highest admitting temperature was 106.2 F. in a 17 year old male patient who had a gangrenous appendicitis of one day's duration. He was operated upon, removing the appendix without drainage, and survived. Forty-three percent of all the acute cases had a temperature of 100 degrees F., or over on admission to the hospital. Seventy-one percent of the cases which had perforated with abscess formation had an admitting temperature of 100 degrees F. or more. Sixty-three percent of the cases which had perforated without abscess formation had admitting temperatures of 100 degrees F. or more. The yearly average temperatures and pulse rates are shown on Table IX.

TABLE VI

Type of Acute Appendicitis and Sex St. John's Hospital

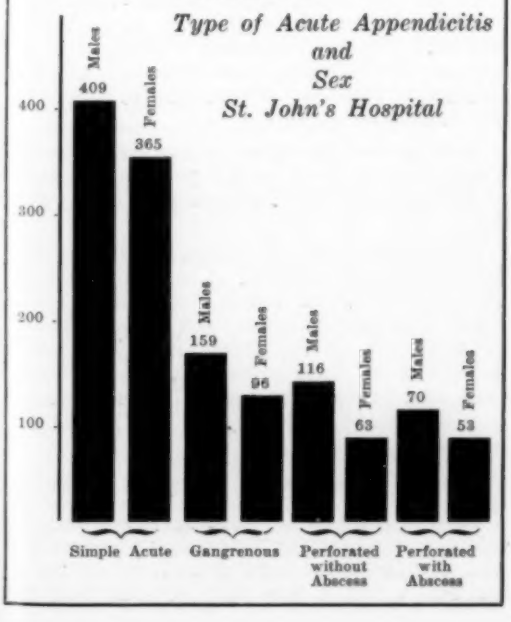


TABLE VII

Age-Groups in Acute Appendicitis St. John's Hospital

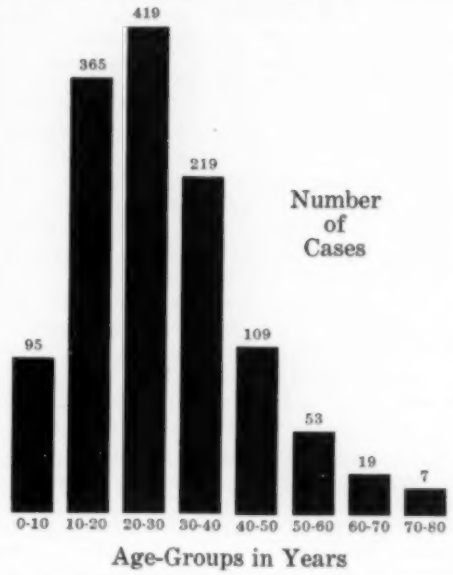


TABLE VIII

Acute Appendicitis

Average Elapsed Time in Days Between Onset of Acute Attack and Admission To St. Johns' Hospital

Year	Simple Acute	Gangrenous	Perforated Without Abscess	Abscess	All Cases
1927	3	3	10	8	4.2
1928	2	3.5	2	8	2.9
1929	3	2	6	7	3.9
1930	3	2	4	5	2.9
1931	2	1.4	3	6	2.3
1932	2	3	3	6	3.0
1933	2	2	6	10	2.1
1934	2	2	3	10	2.4
1935	2	2	3	7	3.0
1936	2	1.3	3	7	2.7

Average for all acute cases.....2.9 days
Average for simple acute .....2.3 days
Average for gangrenous.....2.2 days
Average for perforated without abscess.....4.3 days
Average for abscess.....7.4 days

The pulse on admission is the most variable finding; in five instances it was too rapid to count. The highest pulse counted on admission was 220, in a 15 year old female with a perforated appendix who died of diffuse peritonitis one day after admission. The slowest admission pulse rate was 54 per minute, which was in a 45 year old male patient who also had a perforated appendix, which was removed and drained with complete recovery in 24 days. Faster pulse rates were noted in children, as one would expect.

TENDERNESS AND MUSCLE SPASM

Tenderness over McBirney's point seems to be the most frequent finding on physical examination, occurring in 99.2 percent of all acute cases. In ten instances (0.7 percent) of acute appendicitis there was no tenderness on pressure in the right lower quadrant when examined on admission to the hospital. There was no record of a sedative or hypodermic having been administered to any of these ten cases previous to admission. There were no deaths in these ten cases, and the pathological report confirmed the clinical diagnosis in six of these cases.

Muscle spasm was present in 1,072 of the 1,355 acute cases, or in 79.1 percent of all acute cases. In 85 cases, or 6.2 percent there was no muscle spasm on admission to the hospital. In 198 cases, or 14.6 percent of the cases there was no record on the chart whether the patient had muscle spasm or not.

ABDOMINAL RIGIDITY AND MASS

Abdominal rigidity and a palpable mass were the two most infrequent physical findings, probably because the (perforation) generalized peritonitis and abscess formation occurred in only 6.29 percent and 4.15 percent respectively in this series of cases. Abdominal rigidity was present in 291 cases, or 21.4 percent of all the acute cases. In 345 instances, or 25.4 percent, there was definitely no abdominal rigidity. There was no record in 719 cases.

The total number of appendicitis with perforation was 302, of which 182 were perforated without localization, and 120 were perforated with abscess formation. Of the 182 cases of perforated appendix without localization, 86 cases, or 47.2 percent had definite abdominal rigidity. Twenty-six cases, or 14.2 percent were definitely without abdominal rigidity, and there was no record in the remainder.

Of the 120 cases of perforated appendicitis with abscess formation 35, or 29.1 percent had definite abdominal rigidity, and 27 cases or 22.5 percent were definitely without abdominal rigidity. There was no record in the remaining cases.

A mass was palpated on admission to the hospital in 94 cases or 6.9 percent, 50 cases of which proved to be abscesses of the appendix.

Of the 120 cases of abscess of the appendix which were proven at operation 50, or 41.6 percent, had a definite mass in the right lower quadrant palpable on admission to the hospital. In 28 instances, or 23.3 percent, there was no mass in the right lower quadrant, and in the remaining 42 cases no mention was made in the record whether or not a mass was present.

TREATMENT (26-58)

It was desired in making this study to make a comparative study of the operative and non-operative management of acute appendicitis, but it was soon obvious that the

treatment was practically entirely operative as soon as diagnosis was made. The few cases that were treated non-operatively were in patients who refused operation, or who were, for some reason, dismissed without operation. Of the 1,355 cases of acute appendicitis, 1,291 cases, or 94.3 percent were operated upon, and 64 cases, or 4.7 percent were treated non-operatively. Of the 1,291 operative cases, the appendix was removed in 1,201 at the primary operation.

The most often used incision is the right rectus (muscle separating) incision which was used in 805 cases, or 62.3 percent of all operative cases. The McBirney incision was used in 187 cases, or 14.4 percent; a lower midline incision was used in 84 cases, or 6.5 percent; a right para median incision was used in 51 cases, or 3.9 percent; a transverse incision was used in 28 cases, or 2.1 percent; a right para rectus incision was used in 21 cases, or 1.6 percent; an oblique incision was used in three cases, or 0.2 percent; a flank (kidney incision) and semilunar incision were used in two cases each, or 0.1 percent respectively. No report was present in 76 instances of the type of incision used. The type of incision varied more with the operator than with the type of case, certain operators using one type of incision more than another.

In the 180 cases of perforated appendicitis without localization, the right rectus incision was used 112 times, or 62.2 percent, the McBirney incision 15 times, or 8.3 percent, the right paramedian incision 11 times, or 6.1 percent, the right pararectus incision six times, or 3.3 percent, the lower midline six times, or 3.3 percent, and transverse incision in three cases, or 1.6 percent, and the semilunar incision in one case, or 0.5 percent. No operation was performed in 11 cases, and the type of incision was not recorded in 15 cases, or 8.3 percent.

In the 120 cases of perforated appendices with abscess formation the following incisions were used: right rectus 72 times, or 60 percent; the McBirney incision 13 times, or 10.8 percent; the lower midline incision eight times, or 6.6 percent; the transverse incision three times, or 2.5 percent; the right paramedian incision four times, or 3.3 percent; the right pararectus one time, or 0.8 percent, and the flank incision two times, or 1.6 percent. Five cases were not operated, and in 12 records no record was made of the type of incision used.

Of the 1,291 cases operated upon, a single appendectomy without drainage was done in 768 cases or 59.4 percent, and appendectomy with drainage in 388 cases, or 30.0 percent, and drainage without an appendectomy in 91 cases, or 7.0 percent. The remaining records were not clear on this point. Table X shows the yearly treatment of acute appendicitis in relation to drainage.

TABLE IX

Yearly Average Temperatures, Pulse Rate, and Leucocyte Counts In Acute Cases On Admission

St. John's Hospital

Year	No. of Acute Cases	Average Temperatures	Average Pulse Rate	Average Leucocyte Count	Average Poly Count	Total No. Leucocyte C
1927	61	100.1	100	17,200	84	56
1928	137	100.4	102	16,800	81	137
1929	174	99.4	100	17,700	80	158
1930	172	99.8	96	16,300	85	159
1931	159	99.6	94	15,400	82	151
1932	92	99.7	92	15,200	83	83
1933	134	100.0	96	14,500	82	134
1934	149	99.6	95	14,100	80	140
1935	132	99.5	95	15,000	80	126
1936	145	99.6	96	16,100	83	145

* Includes perforated, abscess, gangrenous, and simple acute cases.

Highest temperature	106.2	Highest Leucocyte	85,000
Lowest temperature	95.6	Lowest Leucocyte	4,350
Highest pulse rate	Too fast to count (220)	Highest Poly	98
Lowest pulse rate	54	Lowest Poly	25

LABORATORY (9, 11, 12, 14, 16)

(*Poly and W. B. C. Count*)

On admission to the hospital a routine blood count is made, consisting of R. B. C.'s, W. B. C.'s, estimation of hemaglobin, and differential white count. White blood counts were present in 1,309 charts of the 1,355 cases of acute appendicitis, and the poly count was present in 1,296 cases of the 1,355 acute cases. Many charts had more than one routine blood count recorded.

The highest white blood cell count on ad-

TABLE X

Treatment of Acute Appendicitis in St. John's Hospital, Tulsa, Oklahoma*

Year	Appendectomy Without Drain	Appendectomy With Drain	Drain Without Appendectomy	Conservative (No Operation)
1927	32	18	6	4
1928	67	49	7	6
1929	85	65	8	1
1930	79	70	6	11
1931	102	44	7	5
1932	58	18	9	4
1933	79	33	11	10
1934	96	27	13	7
1935	77	34	11	8
1936	93	30	12	8
Totals— (1310)	768	388	90	64

* Includes Simple Acute, Abscess, Perforated and Gangerous.

mission to the hospital was 85,000 (with an additional diagnosis of leukemia), and the lowest 4,350. The yearly average white blood cell and poly count is shown in Table IX, and is remarkably constant, the highest being 17,200 and the lowest 14,100.

There were two white blood cell counts below 5,000; 160 cases had counts between 5,000 and 10,000; 442 cases had counts between 10,000 and 15,000; 386 cases were between 15,000 and 20,000; 178 patients were between 20,000 and 25,000 and; 53 were between 25,000 and 30,000; 28 between 30,000 and 50,000, and one above 50,000.

PATHOLOGICAL REPORT (59-76, inclusive)

In spite of the fact that the hospital lacked a full time pathologist in its first year of opening, complete histopathological reports were present on 1,236 of the 1,355 records of acute appendicitis. Only ten charts failed to have the complete pathology report after the full time pathologist assumed his duties, so that 91.2 percent of all records had a complete histopathological report attached; 99.1 percent of all records had a complete report after the full time pathologist arrived.

In the acute cases the clinical diagnosis of the pathologist corresponded in about 81.1 percent of all cases in which a pathological report was attached. Of the 1,355 cases with a final diagnosis of some form of acute appendicitis there were 199 cases which the pathologist diagnosed as chronic, fibrous, etc., and 53 cases which had a pathological diagnosis of subacute appendicitis. Of the 1,765 cases which had a final diagnosis of chronic appendicitis, or in which the appendix was removed prophylactically, there were pathological reports of early acute appendicitis in 29 cases, acute or gangrenous appendicitis, in 36 cases, and subacute appendicitis in 83 cases.

HOSPITAL DAYS (7, 9, 14, 16)

The average number of hospital days for all acute cases of all types was 13 days. The average for the simple acute was 10.6 days; for the gangrenous non-perforated 12.7 days; the perforated without abscess formation 19.1 days, and the perforated with abscess formation was 21.5 days as shown in Table XI.

In general the number of hospital days increased with the number of days from the onset of the attack to admission to the hospital and with the ingestion of a cathartic.

MORTALITY

The causes of death for the 96 mortalities in the acute cases are listed in Table XII. Of the 96 deaths there were 54 males, and 42 females, giving a mortality rate of 6.9 percent, and 7.3 percent respectively, according to sex.

There were ten deaths in the 64 cases treated without operation, giving a mortality rate of 15.6 percent. Of these, four died within 24 hours after admission to the hospital, so that the corrected mortality for the non-operative treatment is 9.3 percent. This is not a large enough series to be of any value, as was hoped in the planning of this survey. There were 1,291 cases of acute appendicitis operated upon with 86 deaths, giving an operative mortality rate of 6.6 percent. Of these 86 deaths four died within

TABLE XI

Hospital Days and Type of Appendicitis

TABLE XII

Causes of Death in the Fatal Cases of Acute Appendicitis, St. John's Hospital

1. Generalized peritonitis	40
2. Peritonitis with	
a. Fecal fistula	3
b. Pneumonia	2
c. Paralytic ileus	2
d. Chronic nephritis	1
e. Abscess formation	
1. Pelvic abscess	2
2. Liver abscess	1
3. Dissecting B. Welchii abscess	1
4. Multiple adbominal wall abscess	1
5. Subdiaphragmatic abscess	1
3. Peritonitis from rupture of abscesses	
a. Adbominal wall	1
b. Iliac fossa	1
c. Appendiceal	1
4. Intestinal obstruction	
a. Ileus	4
b. Cecal intussusception	1
c. Volvulus	1
d. Obstruction, cause (?)	1
5. Collapse lung	1
6. Acute hemorrhagic enteritis with lobar pneumonia	1
7. Acute enteritis	1
8. Retroperitoneal cellulitis	1
9. Acute suppression of urine	1
10. Pneumonia	
a. Influenzal	1
b. Other types	3
11. Cerebral hemorrhage	1
12. Brain embolus	1
13. Acute pulmonary edema	2
14. Not determined or listed	19
TOTAL	96

24 hours after admission to the hospital, giving a corrected operative mortality rate for acute appendicitis in all types of 6.3 percent.

The mortality according to the type of acute appendicitis is shown in Table II, and is 2.22 percent for simple acute, 4.47 percent for gangrenous, 20.8 percent for perforated without localization, and 15 percent for perforated with abscess.

The mortality according to age groups is as follows: there were ten deaths in the group from birth to ten years, giving a mortality rate of 10.5 percent; 18 deaths in 10-20 year group, or 4.9 percent; 17 deaths, or 4.0 percent in 20-30 year group; 17 deaths, or 7.7 percent in 30-40 year group; 12 deaths, or 11.0 percent in 40-50 year group; eight deaths, or 15.0 percent in the 50-60 year group; seven deaths, or 36.8 percent, in the 60-70 year group; three deaths, or 42.8 percent in the 70-80 year group.

The mortality rate according to the type of incision used is: 63 deaths out of 805 right rectus incisions giving a mortality rate of 7.8 percent; four deaths out of 187 McBirney incisions, or a mortality rate of 2.1 percent; eight deaths out of 84 midline incisions, or 9.5 percent mortality; one death out of 51 paramedian incisions, or a mortality of 1.9 percent; one death in 21 para rectus incisions, or a mortality rate of 4.7 percent, and one death in 28 transverse incisions, or a mortality rate of 3.5 percent.

The mortality according to leucocyte count is as follows: There were no deaths in patients with a blood count under 5,000; ten deaths, or 6.2 percent in patients with a leucocyte count between 5-10 thousand; 24 deaths or 5.4 percent in the 10-15 thousand group; 40 deaths, or 10.3 percent in the 15-20 thousand group; 12 deaths, or 6.7 percent in the 20-25 thousand group; three deaths, or 5.6 percent in the 25-30 thousand group; five deaths, or 17.8 percent in the 30-50 thousand group; one death or 100 percent in the 50 thousand upward group. Two-thirds (64 deaths) of all deaths occurred in those patients having a blood count between 10 and 20 thousand.

There were 24 deaths in cases which were not drained, or a mortality of 3.1 percent, while there were 60 deaths in cases that had drainage, or a mortality rate of 12.5 percent.

The mortality rate compared to the surgeons was studied and it was found that the ten surgeons who had operated upon 2,009 cases, or 64 percent of all cases of appendicitis in St. John's Hospital had 59 deaths,

TABLE XIII

Mortality in Acute Appendicitis in Other Hospitals

Hospital	No Cases	Mortality Percentage	Author
London Hospital	602	3.5	Hunter
(Collected)	1765	4.9	Wilensky
Leeds General Inf.	1080	5.7	Flint
27 Hospitals in Philadelphia	5121	5.97	Bower
Ford	940	6.5	McClure
Evanston	1138	4.13	Christopher
Union Memorial, Baltimore	1804	5.0	Finney
Employees Hosp., Fairfield, Alabama	757	5.94	Pool
Barnes and St. Louis Children's Hosp.	1859	5.00	Keyes
N. Y. Hospital	304	5.5	Garlock
San Diege	1031	8.2	Holder
Cincinnati General	2921	6.4	Reid
Providence Hosp., Detroit	10000	3.79	Davis
AVERAGE		5.19	
St. John's Hospital Tulsa, Oklahoma	3135	6.49	E. O. Johnson

TABLE XIV

Mortality Rates of Other Hospitals, All Types of Appendicitis

Hospital	Year Published	Years Studied	No. Cases	All Types of Appendicitis	Author
Cincinnati General	1936	1915-34	2921	6.3	Reid
Providence (Detroit)	1937	1925-35	10,000	2.92	Davis
Jameson Memorial (New Castle, Penn.)	1938	1935-36	440	2.3	Flannery
Presbyterian (N. Y.)	1936	1916-34	1175	5.08	Schullinger
Newark City Hospital (New Jersey)	1938	1927-36	1463	2.73	Sparague
Mr. Sinai (N. Y.)	1934	1931-33	173	2.8	Arnheim
27 Philadelphia Hospitals	1934	1928-32	14,904	4.79	Bowes
Bismark, N. D.	1934	1927-32	1000	3.8	Quain
Boston City, Boston, Mass.	1933	1927-30	2106	5.8	Walker
Atlanta Hospital Atlanta, Ga.	1932	1927-32	4270	4.4	Boland
Barnes Hospital Children's Hospital (St. Louis, Mo.)	1934	1915-32	1099	5.0	Keyes
Touro Infirmary (New Orleans)	1931	1924-29	2415	9.9	Miller
TOTAL			41,966	Average 4.6	
St. John's Hospital (Tulsa, Oklahoma)	1941	1927-37	3135	4.0	E. O. Johnson

or 60.8 percent of all the deaths which occurred during those years studied and a mortality rate of 2.9.

CHRONIC APPENDICITIS (102-112)

In the study of 3,135 cases there were 1,765 cases in which there was a diagnosis of chronic, interval, subacute, or recurrent appendicitis, or in which the appendix was removed during the course of another operation. Of these 1,765 cases there were 806 cases which were diagnosed as chronic appendicitis, and no other operative procedure was done except an appendectomy. On these cases, because of the dispute of whether there is such an entity as chronic appendicitis, it was decided to group these as chronic cases, even though the diagnosis of chronic appendicitis was on many other of the remaining charts. But if any other operative procedure was done, a cyst of the ovary was punctured, or a portion of an ovary was resected, that case was not grouped among the chronic ones, even though the clinical diagnosis was such. For this reason it is certain that there are only chronic cases in this class; any further subdivision of this group would be inaccurate according to the present records.

AGE AND SEX

Of the 1,765 cases there were 1,356 females and 409 males who had their appendices removed, or in which a diagnosis of chronic appendicitis was made.

Of the 806 cases in which the appendix only was removed and a diagnosis of chronic

appendicitis was made, there were 354 males and 435 females, which is a greater proportion of females than in acute appendicitis in this hospital. There was no record of the sex in 17 cases.

The youngest patient with a diagnosis of chronic appendicitis was seven years of age. The youngest in this group was three years of age with a pathological diagnosis of "subacute congestion of the appendix."

TREATMENT

Of the 806 cases of chronic appendicitis, 89 were treated without operation, and the remainder were operated upon.

The most frequently used incision was a lower midline suprapubic which was used in 569 cases, the McBirney in 103 cases, lower right para median in 70 cases, the transverse in 16 cases, the para rectus and right inguinal in 10 cases each, the right oblique in three cases, and the left inguinal in one case.

Drains were used in 136 instances.

In addition to an appendectomy in 959 cases, the following operations were done: cholecystectomy in 56 cases, hysterectomy in 180 cases of which 21 were total, D. and C. in 65 cases, T. and A. in 14 cases, presacral sympathectomy in ten cases, hemorrhoidectomy in 21 cases, repair of hernia in 24 cases, circumcision of male in six cases (female, one case). Suspension of uterus in 194 cases, nephrectomy in one case, posterior gastroenterostomy one case, many cauterizations of the cervix, and colporrhaphies.

Besides the appendectomy, there were 731 tubes removed and 411 ovaries.

MORTALITY

There were 11 deaths, ten of which occurred where there were other operative procedures besides the appendectomy. The one death in the chronic appendicitis only, occurred on the table. The cause of this death was not determined. The mortality rates for all types of appendicitis are listed in Table II.

APPENDICITIS MORTALITY IN OTHER HOSPITALS

There are many complete detailed reports comparing the mortality rates of various hospitals according to the type of appendicitis. No attempt has been made to review the literature. Inasmuch as this is a general report, the mortality rate of St. John's Hospital has been compared to other hospitals only in the acute cases, and in all types of appendicitis, as shown in Tables XIII and XIV.

The mortality rate of all the acute cases is 6.49 percent, and for all cases (includes acute, subacute, and chronic, and excludes all incidental appendectomies) is 4.0 percent. These figures compare favorably with other hospitals listed, which are recent reports over a similar period of years. The hospitals compared are in ten other states, six states of which have a lower mortality rate than Oklahoma.

CONCLUSIONS

(1) A review of the records of clinical cases of appendicitis and appendectomies in St. John's Hospital, Tulsa, Oklahoma for the years of 1926 to 1937 is presented.

(2) The types of appendicitis and sex was in the same proportion as other reports, except that males were in greater proportion to females in gangrenous appendicitis and in the perforated cases without abscess formation (Table VI).

(3) The age groups (Table VII) were similar to other reports.

(4) The treatment of appendicitis in St. John's Hospital is almost entirely operative.

(5) The mortality rate for the entire series of 3,135 cases was 3.09 percent.

The mortality rate for all acute, and chronic cases was 4.0 percent.

The mortality rate for chronic appendicitis was 0.12 percent.

These mortality rates compare favorably (Tables XIII and XIV) with those found in studies in other hospitals over the same period of years although there are many reports with a much less mortality rate than in this series.

(6) Chronic appendicitis is discussed briefly.

I wish to express my appreciation to the Board of Governors of St. John's Hospital for the privilege of reviewing the records of the Staff, and to Miss Kathryn Moriarty, who is in charge of the records, for her willing help. I am very grateful to Elizabeth Shultz, Helen Crickard, R. N., Kathrine Johnson and Marie Rush for their much needed assistance.

A bibliography of 112 references can be obtained on request.

Zemmer
OAKLAND, STATION
PITTSBURGH, PA.

PRESCRIBE OR DISPENSE ZEMMER
Pharmaceuticals, Tablets, Lozenges, Ampules, Capsules, Ointments, etc. Guaranteed reliable potency. Our products are laboratory controlled.
Write for general price list.
THE ZEMMER COMPANY OK 8-41
Chemists to the Medical Profession. Oakland Station, Pittsburg, Pa.

Some Inter-Relationships of Maternal and Fetal Physiology*

GEORGE R. OSBORN, M.D.

TULSA, OKLAHOMA

Mysterious, confusing, speculative, fascinating and intriguing, are some of the impressions that come with just a little study or contemplation of this subject and it is with both trepidation and presumption that I attempt to discuss it.

The inter-relationships of maternal and fetal physiology implies a symbiotic relationship between the fetal and maternal organisms and opposes the parasitic relationship.

For the purpose of discussion, I shall not distinguish between the embryonal and fetal stages of gestation because from the standpoint of symbiotic relationship it would be a distinction without a difference.

Every normal female of the human species from the beginning of ovulation in puberty until its ending with the menopause is a potential and physiological candidate for motherhood.

Every lunar month she involuntarily but physiologically prepares to begin the primary function of her being and is conscious of being normal.

However if fertilization of the ovum and implantation takes place, new and increased physiological processes begin and the time lock upon the flood gates of menstruation fails to open. No new hormone from the embryo is known, yet some exciting factor eminates from it that stimulates immediate activity in all endocrine bodies of the maternal organism, and brings into control an *office of production management* that is a marvel of dispatch and efficiency.

It seems that this exciting factor, just mentioned, is merely the contact of the fertilized ovum with the endometrium which is sensitized by an active corpus luteum, causing a transition of some of the endometrial cells into decidual cells and through their cooperation with the chorion at the point of contact, the placenta is formed. In the entire process of gestation, I believe the deciduo-placental tissue is the only newly differentiated tissue peculiar to the process of reproduction. Also it is only through the placenta that any inter-relationship can be transmitted.

The Ashheim-Zondek test for pregnancy heralded to the modern medical world, the earliest evidence of a physiological relationship between the fetal and maternal organism. Historically, however, priority for the discovery of the growth principle in the pregnancy urine is anonymous in antiquity for Ashheim (I) is quoted as stating that "the diagnosis of pregnancy by means of urine is a very ancient practice — that in an Egyptian papyrus some 3,000 or 4,000 years old it is directed that should a woman wish to know whether or not she is pregnant she should place some earth and barley in a vessel and add a little of her urine each day. Should the barley grow she is pregnant." Verily, there is nothing new under the sun, but this test did reveal the growth principle in the anterior pituitary-like substance and establish an inter-relationship between fetal and maternal physiology. That the initiation of it eminated from the embryo and not from the maternal endometrium, we have long known, for the fertilized ovum can establish an ectopic contact upon the maternal peritoneum and at that point of contact a placenta developes.

Until the fourth month of gestation the fetus must depend, so far as we know, upon the maternal organism for its hormones and its chief physiological processes of circulation, metabolism and elimination, while the maternal organism is furnishing the supplies which include foods and hormones and carrying away the embryonal waste.

Then when the fetal endocrine bodies begin functioning and its vital organs such as the liver, pancreas, spleen, kidneys, etc., begin to assume their responsibilities or activities, the maternal physiology must modify its actions accordingly. What this modification might be I believe no one could say, however we do know that, and I quote from Best and Taylor's Physiological Basis of Medical Practice (1), "A hormone is a chemical substance which having been formed in one part of the body is carried in the blood stream to another organ or tissue and influences its activity," and; "apart from small amounts which may be held in the endocrine organs themselves, hormones are

*Read before the Section on Obstetrics, Annual Session, Oklahoma State Medical Association, May 21, 1941, in Oklahoma City.

not stored in the body," also "a hormone does not stimulate the organ that secretes it, thyroid extract, for example, does not stimulate the thyroid, and the ovarian hormones do not stimulate the ovary directly."

Pathological physiology and toxic conditions in the mother reflect upon the physiology of the fetus and vice versa.

For example diabetes in the mother furnishing a high sugar diet causes a hyperinsulinism in the fetus and a consequent hypoglycemia.

The same effect on the fetus in a normal mother may result from the intravenous administration of glucose over a period of days.

Therapeutically we have learned that large doses of the various hormones have an inhibitory action upon the organs that produce them, even in some instances causing atrophic processes in them. Hence it is a delicate adjustment that measures the amount of the hormones from the mother that will properly meet the needs of the developing fetus.

The most recent research work indicates that the cause of the late (2) toxemias of pregnancy, whenever discovered will be found to be a conflict in the inter-relationship of the maternal and fetal endocrines as they involve the metabolic processes of the fetus, and, as has so long been suspected, the placenta which is the transfer depot between the fetal and maternal organisms.

As previously mentioned, placental tissue is newly differentiated tissue peculiar to the process of reproduction. Like the scaffolding constructed for the purpose of carrying and placing of materials in a new building, the placenta is constructed of tissue and in a manner to last only for the period of emergency, which in the case of gestation is 40 weeks and in that time there is considerable wear and tear upon its tissues so that there is macroscopic evidence of degenerative changes which have been going on, we know not, for how long.

Every one who has practiced obstetrics has observed infarcts and calcium deposits in placentas and wondered why they occurred.

Pathologists tell us that there are microscopic evidences of degeneration in all placentas.

Hunt, Patterson and Nicodemus (2) one year ago reported that from a clinico-pathological study of 180 pregnancies and experimental work, their conclusions were that placental infarcts and degenerating placental tissue liberates autolysates which, if massive, or if renal function is poor, will produce severe late toxemia and eclampsia. Also that hypercholesterolemia of pregnancy is due to a subclinical hypothyroidism that becomes exaggerated due to the increased metabolism for pregnancy and the eclampsia is primarily due to a fetal hypometabolism which is secondary to a maternal hypothyroidism.

Summed up, their work has shown that hypothyroidism in the mother produces hypothyroidism in the fetus, and that results in fetal hypercholesterolemia and the excess c h o l e s t e r o l produces the degenerative changes in the placenta, which liberates the autolysates which causes the late toxemias of pregnancy.

This coincides with the clinical observation, that the chunky phlegmatic type of blonde is a potential eclamptic for they frequently have a low basal metabolic rate and high blood cholesterol.

Fluhmann (3) in discussing endocrines, states that "Estrogens which occur naturally in the human being are sterols, and to this group belong cholesterol, the bile acids, ergosterol, c a l c i f e r r o l and androgenic substances." He mentions estrone, estriol, and estradiol, and then observes that, "the fact that these compounds are very closely related chemically, and one may be converted into the other, may prove of vital importance in determining the mechanism concerned with the metabolic processes of the physiology of reproduction."

It is interesting to note that it has been shown that cholesterol is not transmitted from the mother through the placenta to the fetus (4) but is produced in the fetus itself in direct proportions as the cholesterol in the mother's blood. Clinically this hypercholesteremia accompanies hypothyroidism and a low basal metabolic rate and hypothyroid mothers are prone to have larger or fatter babies.

Thyroid extract administered to these mothers will reduce their hypercholesterolemia and also the weight of the baby.

The study of the inter-relationships of fetal and maternal physiology reveals that the activators of all life processes are the hormones produced by the endocrine bodies. They produce living chemistry — bio-chemistry and bio-physics.

Although, in the past 20 years an immense amount of research work has been done to solve the problems of endocrinology, metabolism, etc., as applied to the physiological processes of reproduction, the clinician or practitioner who tries to make a practical application of this new found knowledge finds himself in wonderland.

If he be philosophical, he will ask: How does the growth hormone, so abundant in the circulation of the pregnant woman, stimulate growth in the fetus while the woman does not grow in stature?

What causes labor pains to begin? Does this signal come from the fetus or from the mother?

Why does a tuberculous woman, when she becomes pregnant, apparently take on new life and even in some cases where the disease is in an advanced stage, give birth to a healthy, well developed infant?

In abruptio placenta, only what disaffection between the maternal and fetal physiology can, like an explosion, separate the placenta, burst the uterine blood vessels and tear asunder muscle fibers in the musculature of the uterus?

These are some of the questions that in the light of the results of clinical and experimental research now going on, may soon be solved.

As clinicians working in hospitals with pathologists and laboratory technicians even though not classed as research hospitals, we have frequent opportunities to learn more about gestation. For example, autopsies upon feti from abortions and premature stillbirths. Also cord blood studies afford an opportunity to gain more knowledge of fetal physiology both normal and pathological.

Study of the cord blood in every case of eclampsia, comparing it with the mother's blood at time of delivery.

Then there is the placenta. Of course, there are many reports on placental examinations, but as it is the intermediary between maternal and fetal physiology, a careful examination is made, both structurally and chemically in all cases of pathology, either in the fetus or mother; such examinations may solve some of the perplexities of gestation.

BIBLIOGRAPHY

(1) Best and Taylor's Physiological Basis of Medical Practice.
(2) Placental Infarction and Eclampsia—American Journal of Pathology, Volume 10, No. 5, May 1940. Etiology of Eclampsia, Volume 8, No. 2, March 1938.
(3) Endocrine Studies—C. F. Fluhmann—American Journal of Obstetrics and Gynecology. October 1940, Page 612.
(4) The Etiology of Eclampsia—Patterson, Hunt and Nicodemus—Journal of Clinical Pathology, Volume 8, No. 2, March 1938.

Modern Chemotherapy in Otorhinolaryngology and Ophthalmology*

MARVIN D. HENLEY, M.D.
TULSA, OKLAHOMA

A survey of the literature shows that there is available a large number of publications on the uses of sulfonamide and its derivatives in ophthalmology and otorhinolaryngology. There are more than 500 articles dealing with the use of this drug in cases of oto-and rhinogenous sepsis and meningitis. More than 100 discuss the value of this drug in cases of trachoma and there are another 100 on the value of the drug in gonococcic ophthalmia. This paper is more or less a statistical recapitulation. Acknowledging the fallibility of statistical studies, one cannot fail to conclude that the result obtained from such an extensive survey, is not coincidence.

For many centuries it was the great desire of many physicians as well as of many quacks to find an omnipotent remedy, and antidote, which would be effective against all poisonings and diseases. Since the discovery of the pathogenic germs, this desire changed but slightly. It became the aim of therapeutics to find a drug that would kill all bacteria, a drug which could be called The Great Sterilizer.

Up until EHRLICH'S time there were but a few naturally occurring chemical compounds such as quinine, emetine, etc., which could be successfully used against certain infections. EHRLICH'S idea was to prepare synthetic compounds against specific types of infections. In 1904, he discovered Trypan Red, which proved to be effective against certain trypanosomata in certain animals.

Since EHRLICH'S discovery, several thousand synthetic drugs have been prepared and clinically tried against spirochaetal and trypanosoma diseases. About 12 compounds were found to be highly specific.

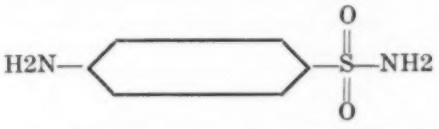
Up to 1932, there was, however, no synthetic drug prepared against such common bacteria as streptococci, staphylococci, pneumococci, or gonococci. In that year, a red synthetic azo dye had been made by two German chemists, MIETZSCH and KLARER, which could cure mice of a fatal streptococcic septicemia. The dye was called first "Streptozone," later named "Prontosil," and has been used at European clinics successfully in human streptococcic infections, but until about 1936 it was practically unknown in the Americas.

Many other azo dyes of the Prontosil family have been found effective against various

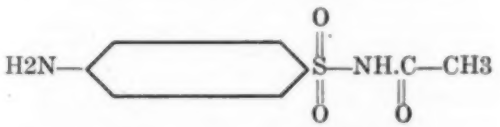
*Read before the Section on Eye, Ear, Nose and Throat, Annual Session, Oklahoma State Medical Association, May 21, 1941, in Oklahoma City.

bacterial infections, and further analysis made by the German, DOMAGK, in 1935 showed that the active substance of all these dyes is paraaminobenzene-sulfonamide, colloquially called sulfanilamide or sulfonamide. Many drug manufacturers began to prepare it, and gave it so many trade names that a great confusion was created among the physicians. Sulfonamide, Streptocide, Prontylin, Sulfamidyl, Astreptine, Septoplix, Lysococcine, Prontosil album—all mean the same thing: Sulfanilamide. Regardless of how compound the drugs are, all of them are broken down in the body, and their active ingredient, the sulfanilamide, liberated.

Chemically, the simplest formula is that for sulfanilamide: it contains one benzol ring to which an amino radical (-NH2) and a sulfonamide radical (*SO2.NH2) is attached in the so-called "para" position.



Albucid differs from this only by substituting the amino portion of the sulfonamide by the acetamide radical, and the drug is called paraamino benzene-sulfonacetamide.



By substituting different radicals, even whole benzol rings, into the original simple formula of sulfanilamide, chemists obtained very complicated compounds such as the aminophenyl dinitro - phenylsulfonamide, which was proved to be effective even against the anaerobe varieties of Streptococcus. The so-called Red Prontosil has two benzol rings and is called sulfonamide-diaminobenzol. The compound known as Prontosil soluble has three benzol rings in its formula. By doubling the sulfanilamide itself in the molecule, the so-called "disulfonamides" were prepared, better known as Diseptal or Uliron; they proved to be especially effective against gonococcal and staphylococcal infections.

Lately, the experiments of the pharmaceutical chemists on the sulfonamide molecule resulted in another synthetic drug, which proved to be specific against pneumococcal infections. This drug is known in the U. S. as sulfapyridine, elsewhere as Dagenan, M & B 693, Ronin, Elektyn. Chemically, it is 2-paraaminobenzene-sulphonyl-aminopyridine.

Another new drug, also a sulfanilamide derivative, is sulfmethylthiazol, which was found to be effective against staphylococcic infections. LEVINE says that it is also a good substitute of sulfapyridine, with less toxicity.

Thus, we have now effective remedies, in fact poisons, against four types of pathogenic bacteria: Streptococcus (sulfanilamide), Staphylococcus (sulfmethylthiazol), Pneumococcus (sulfapyridine), and Gonococcus (disulfonamide, and sulfapyridine).

Though colorless themselves, sulfanilamide and some of its derivatives as sulfapyridine are easily converted to intensely colored dyes. This property has been utilized for colorimetric determination of the concentration of the drug in blood and other body fluids, and such determinations are not only advisable but also necessary because there is no other safe way of administering the correct and efficient dosage of these drugs but by controlling the blood level of the drug constantly. There has to be a definite concentration of the drug in the body in order to kill the bacteria or inhibit their growth. If the dosage is less, the drug is probably more dangerous for the patient than a high toxic dosage.

The laboratory needs about 10 cc of oxalated blood from the patient. Five cc of the blood is then diluted with 35 cc of water, the proteins precipitated with 10 cc of a 20 percent solution of trichloracetic acid, the mixture filtered, and a measured quantity of the filtrate treated with 1-naphthylethylene diamine, from which a red color of different intensity results, and the intensity of the color gives the concentration of the drug in the body fluid.

The sulfanilamides are rapidly absorbed from the intestinal tract or from the subcutis, and rapidly distributed in the whole body. The sulfanilamide can be demonstrated in the blood within a few minutes; in the saliva, tears, sweat within an hour; in the cerebrospinal fluid within a few hours. Bellows and Chinn of Great Britain show the distribution of sulfanilamide in the various ocular tissues. Ocular tissues are rapidly penetrated by the drug, traces of which are found throughout the eye 15 minutes after oral administration. The rapidity of penetration depends upon the relative vascularity of the tissues; for instance concentrations of sulfanilamide in the various ocular tissues occur in the following order: chorio-retinal-tissues, corneo-scleral tissues, aqueous, lens and vitreous. The maximum concentrations were reached in the corneo-sclera at the end of four hours; in the blood, the aqueous and the vitreous at

the sixth hour; and the lens, choroid and retina at the twelfth hour. After a total of a three gram dose the blood concentration reaches the maximum peak of 40 mg percent in about two hours, but the concentration rapidly falls if there is no successive administration; it becomes 1 mg percent in 24 hours. The drug is partly detoxicated in the liver, but it is chiefly excreted by the kidney, about 100 hours being needed for its complete evacuation. For different types of infections different concentration of the drug is needed in the blood, but for severe infections, and for infections with osseous foci about 10 mg percent of sulfanilamide is necessary. Sulfapyridine is usually maintained at a blood level of 5 mg percent, and sulfmethylthiazol at from 5 to 7 mg percent.

The drug has been sometimes recommended also for local use with the idea of bringing the substance closer to the local focus of infection. MENGEL studied the appearance of sulfanilamide in the aqueous and vitreous, and found that, though there is absorption when the drug is administered in drops into the conjunctival sac, the concentration of the drug is higher after the peroral use of tablets, being about 3.2 mg percent in the aqueous and 1.1 mg percent in the vitreous 32 minutes after taking the tablets, while the eye drops of sulfanilamide could not bring the drug concentration over 0.1 mg percent. Of course, the concentration of the drug will always be less in the eye fluids than in the blood. PINKHOF found that the sulfanilamide concentration in the conjunctival fluid is 60 percent, in the aqueous 25 percent to 30 percent of the blood concentration.

The pharmacodynamic action of the sulfanilamide derivatives is not yet definitely known. Against in-vitro cultures the pure drug itself is relatively impotent. Yet, in the emulsion of the blood or other body fluids it is definitely bactericidal. Many theories have been proposed for the explanation of this mysterious action. It is most likely that the drug exerts only a bacteriostatic action: it inhibits the growth of the invading bacteria, and thereby indirectly increases the patient's resistance. However, there seems to be also a direct stimulating effect upon the patient's body or upon certain of his tissue functions.

The bacteria against which sulfanilamides may be used effectively are the betahemolytic streptococci, gonococci, meningococci, Streptococcus erysipelatis, Streptococcus scarlatinae, pneumococcus (only sulfapyridine), staphylococcus (sulfmethylthiazole). They are rather impotent against anaerobe infections, and against virus diseases or the so-called "intracellular" infections.

Considering the burden put on the liver and kidney in the excretion of the drug, one should be careful in selecting patients for sulfanilamide therapy. Liver and kidney damage contraindicates sulfanilamide therapy. LEVITT found that a previous x-ray treatment is also dangerous: x-ray always causes some damage to the hemopoietic system, but so does sulfanilamide, and the combination of the two slight damages may precipitate agranulocytosis.

Agranulocytosis is only one of the many toxic effects of sulfanilamide drugs. The toxic effects of sulfanilamide became known first in 1936 in connection with the 76 deaths caused by a vehicle of a sulfanilamide Elixir sold in the United States. The toxic symptoms are:

1. *Gastrointestinal*: nausea, vomiting, desire to defecate after intravenous injection, anorexia from prolonged oral medication, diarrhea, colicky pain. Such symptoms are partly eliminated by the practice of giving 10 grains of sodium hydrocarbonate with each oral dose of sulfanilamide.

2. *Central Nervous System*: Dizziness and headache are very common (TOWNSEND), also depression, mild disorientation, burning sensation, peripheral neuritis, radicular neuritis after intrathecal injections (GRIMAUD), mania;

3. *Respiratory*: Acidosis;

4. *Circulatory*: Cyanosis, sometimes with methemoglobinemia or sulphemoglobinemia, decreased oxygen capacity, cardiac arrhythmias;

5. *Genitourinary*: Albuminuria, casts, cells, hemoglobinuria, prophyrinuria; anuria;

6. *Hepatic*: Toxic hepatitis and jaundice;

7. *Dermatologic*: Purpura, scarlatiniform or morbilliform erythema, photosensitiveness, allergy, exfoliative dermatitis;

8. *Hemotopoietic*: Agranulocytosis (ROBB; MEZZANA, etc.), hemolytic anemia, hemorrhagic aleukia (LEVI);

9. A startling occurrence, to both the physician and the patient, is reported by Bristow. A case of temporary myopia due to the use of sulfanilamide, where the vision of the patient was reduced in the space of a few hours from 20-15 to 20-300. This myopia was apparently the result of a swelling or edema of the lens. There is one other like case reported in literature. Normal vision was recovered and there was no residual defect in both cases. Yet, in spite of the many toxic symptoms and the close neighborhood of toxic and therapeutic dosage, the individual resistance to these drugs may be great. COOPER mentions a patient who took 1,000 tablets of sulfanilamide, without the doctor's

prescription, and without any ill effects (EVANS).

Considering the toxicity of the drug, and the necessity of constant clinical and laboratory supervision during sulfanilamide treatment, the use of the drug should be limited to hospital practice (FOWLER). The experience of many otolaryngologists such as CONVERSE, MAYBAUM, ROSEN, CAMPBELL, CANUYT, and others is against the indiscriminate use of the drug, especially as a prophylactic. They think that it should not be used in minor infections, but should be reserved for truly critical conditions, such as otitic sepsis, thrombophlebitis, labyrinthitis, meningitis, petrositis, and pneumonia. The early prophylactic use of the drug in otitis media is now recommended by many. With potentialities for both good and harm, but largely because of the masking effects, which lead to a sense of false security, administration of these drugs for acute otitis media, with or without symptoms of mastoiditis, is at present controversial. Since the prophylactic dosage is usually small, it may render the bacteria resistant and thus it may predispose to serious complications (CONVERSE). A latent mastoiditis may develop, and it may remain latent and masked by the sulfanilamide (MAYBAUM, ROSEN). CANUYT and CAMPBELL point out that the many toxic symptoms may simulate signs of certain diseases; and may make the diagnosis difficult. Sulfanilamide may cause nausea and vomiting, and one may think that it is due to increased intracranial pressure. It may cause cyanosis and depression, signs of severe sepsis. It very commonly causes dizziness and headache, signs of meningeal irritation. Sometimes a depression and confusion may lead to the false diagnosis of encephalitis. It may also have an antipyretic effect, and thus abolish the one characteristic sign of lateral sinus thrombosis, the septic fever. Indeed, LAW, of New York, found that even the roentgenologist may be misled by the effects of sulfanilamide upon the roentgenogram. I think LAW has brought out a most valuable and pertinent point in regard to the fallacy of x-rays of mastoids that have been taking sulfanilamide. The roentgenologist should be advised at the time the picture is taken, that the patient has been taking sulfanilamide. He suggests also that sterescopic films would lessen the error of the reports by the roentgenologist, since the picture may become so modified that it shows less bone affection than is actually present.

Sulfanilamides can be given by different routes: orally, subcutaneously, intravenously, intraspinally, locally, subconjunctivally. The dosage should be such and so often repeated that a blood concentration of about 10 mg percent be maintained. There is usually a rather high initial dosage followed by smaller maintenance dosages about every four hours day and night. Experience showed that the simplest and easiest way to maintain a constant blood level of the drug is by means of tablets taken orally. There is a formula by which one can fit the dosage according to the body weight, ¾ grain of the drug being needed per pound of body weight given at four-hour intervals for several days, then about ½ grain per pound for some more time.

Others count the dosage in the number of 5-grain tablets. The initial dose is ten tablets on the first day, which will raise the blood level to 10 percent in four hours. This level is maintained by three tablets every four hours on the succeeding days. For children, the initial dose is four tablets on the first day, and the blood level is maintained by one or two tablets every four hours.

Subcutaneous injections have not been very frequently used in our practice. Prontosil soluble may be given in 20 cc. amounts at four-hour intervals in a total of 120 cc in a day. For children, one-fourth of these amounts may be sufficient.

Intravenous injections of a one percent solution of sulfanilamide in physiological saline begin with 700 cc initial dosage, followed by 500 cc every eight hours. Such injections have been tried by BUSACCA in the treatment of various eye infections, but with no success.

Intrathecal injections have been sometimes recommended in the treatment of meningeal infections, but they are not much in use. Only small amounts can be given, not more than the spinal fluid withdrawn before the injection.

Locally, sulfanilamides have been administered in the form of powder, spray, lavage, or ointment. The local use does not cause any untoward effect, but also its therapeutic effect is close to zero. MAGGIOROTTI put sufanilamide powder on the tracheal mucosa, but it did not cause as much reaction as thymol or protargol. ATCHINSON recommended the use of sulfanilamide sprays for nasal and upper respiratory infections, but the effect of such sprays is not evident. BUSACCA showed that in eye diseases the effect of sulfanilamide powder upon the conjunctiva is not more than that of zinc peroxide. He also used a five percent ointment for the treatment of trachoma, without any benefit. The same experience is reported by SCARDACCIONE. Questionable is also whether the ointment or the lavage with sulfanilamide, as recommended by KATTIOFSKY and REIN, have much value in the treatment

of gonorrheal ophthalmia. Indeed, lavage is chiefly for cleaning the eye from gonorrheal discharge, and whether this cleaning is done with boric acid or sulfanilamide it does not matter (LILLIE). MENGEL and PINKHOF discourage the local use of sulfanilamide derivatives as of no value.

Subconjunctival injections of a five percent solution of neoprontosil have been used successfully in the treatment of various eye affections by several ophthalmologists. ROGGENKAMPER saw benefits in corneal ulcers, and BUSACCA found that acute trachoma and its corneal complications were improving from such injections. PATON, of New York, recommends a dosage of 0.3 to 0.5 cc every other day, but he also likes to combine such injections with the oral use of tablets.

As mentioned before, the real dosage is determined by blood chemistry, and the safety of the patient is determined by blood pictures, count of leukocytes, and hemoglobinometry. These chemical and clinical tests should be made every other day (BARBOUR). The efficiency of sulfanilamide therapy can be seen in not more than two to three days. If sulfanilamide acts, it will act promptly, and there is no need to experiment longer than three days according to BURCKHARDT.

The final cure is shown by bacteriological tests. The proof of cure is a negative smear from the site of infection, and repeatedly negative broth cultures several days *after* the discontinuation of sulfanilamide medication. The clinical improvement does not mean a final cure, and it is necessary to continue the medication with reduced dosage. It is especially in the presence of bone lesions (otitis, mastoiditis, osteomyelitis) that one should not be deceived by the clinical improvement. The sulfanilamide medication in such cases was often followed by the reappearance of infection, and bacteria. For such conditions the best rule is to continue treatment with sulfanilamide for at least two weeks after the clinical cure (CONVERSE, ROSENWASSER, etc.)

In treating of infections of the organs within our field our chief aim has been to drive out the bacteria, and the infectious matter which contains them, from the body. For this purpose we have been employing drainage in all its modifications, lavage, and surgical removal of useless infected tissue. Against the infection itself, we had blood transfusions, serotherapy, and vaccines at our disposal. The success of chemotherapy does not mean that all of the older methods of treatment should be discontinued. Chemotherapy has its limitations, especially in otorhinolaryngology.

Many of these infective bacteria produce pus, and necrosis, and for the removal of pus, or necrotic debris we need surgical measures. Many of the inflammations become chronic, productive, and proliferative, and it would be unreasonable to expect that sulfanilamides will wipe away the surplus of tissues. Even in ophthalmology, the general experience with sulfanilamide in the treatment of trachoma was that the nodular and follicular changes are not altered by the drug. Hence, the correct way to look upon chemotherapy is to appreciate it as an adjuvant but not as a panacea. I do not think it logical to condemn a therapeutic measure of known value, for use in minor infections that lead to serious complications, when this is of proven value, in the serious complications. Its value should be acknowledged, and a precaution given as to its possibility of masking symptoms. We may use these drugs for lessening the incidence of complications, or for controlling metastases in sepsis, for limiting the inflammation in diffuse infections, or for the avoidance of postoperative complications (HEBBLE). But we meet with certain failure if we do not take care of the focus of infection surgically.

One of the first in this country to use sulfanilamides on otorhinolaryngological conditions was TOBEY in the late 1936. Literature on the subject began to accumulate rapidly after January 1937, but much of the early literature is skeptical since there was much failure owing to inadequate and empirically chosen dosage of these drugs. In ophthalmological conditions the sulfanilamides made their first success in late 1938. Today, there is probably no eye, ear, nose and throat condition caused by infection of some kind in which sulfanilamides would not have been tried. A cursory glance upon the tremendously increased literature of this subject will suffice.

Bacterial carriers proved to be resistant to chemotherapy according to the experiments of HOYNE.

In cases of *brain abscess,* chemotherapy together with serotherapy is just an adjuvant of surgical treatment (HUBERT, SJOBERG, HAMBY).

Bronchitis of children was treated with sulfapyridine by VASILE. Yet, there is not sufficient evidence for the usefulness of the drug in this condition.

Common cold is probably not an indication for sulfanilamide. ELYAN says that hot water works as well against common cold as do the sulfanilamides. ATCHINSON, however, claims 100 percent success. We may probably follow the advice of BLANKENHORN, who uses sulfapyridine in common colds for the prevention of pulmonary com-

plications. Common cold is a virus disease, but its complications are due to secondary bacterial invasion. Therefore, the use of sulfanilamides has some justification.

Conjunctivitis, if caused by streptococcus, may improve under sulfanilamide therapy (SYKES).

Corneal conditions such as Mooren's ulcer or ulcus serpens, whose etiology is unknown, will benefit from sulfanilamide or sulfapyridine. The improvement is rapid, and the ulcer heals with a very fine cicatrix (BLAESS, ROGGENKAMPER, SZINEGH).

In *Cranial osteomyelitis,* as seen mostly after frontal sinusitis, chemotherapy should be an adjuvant of the usual extensive craniectomy (DROESBEQUE).

In *esophageal* conditions, as far as we know, chemotherapeutics have not been used. Millett, of Hempstead, New York, reports a case, the first in the literature, where sulfapyridine was used successfully in the treatment of pneumococcus, type 19, ophthalmia.

Various *eye diseases,* chiefly conditions of the anterior segment, have been treated with sulfanilamide and its derivatives (PATON, SWAN). As a prophylactic they can be used in perforating eye injuries (CECCHETTO). It has been reported that sulfathiazol powder quickened the primary union of supraorbital wounds (GREENS' EYE HOSPITAL). CASTELLI used these drugs in chronic dacryocystitis, and lacrimal fistula, but sulfanilamides could not cure these patients.

Many authors have reported favorable results in the treatment of *pharyngitis, laryngitis,* and *acute cervical adenitis,* however CAMPBELL found that they are of little value in acute laryngitis of children. BAJKAY reported failure in laryngeal phlegmone and mediastinitis, but some improvement in laryngeal edema and peritonsillar phlegmone; of course, surgery was still necessary.

The greatest success of sulfanilamide is in combating bacterial *meningitis,* either streptococcic or pneumococcic. A survey of the literature shows that for 35 years previous to 1937, only 76 recoveries of streptococcic meningitis are recorded. In approximately two years time, there have been well over 200 recoveries recorded of streptococcic meningitis with the aid of sulfanilamide. One-third of the literature of sulfanilamide is devoted to the description of successfully treated meningitis cases. Cures have been reported by many, and the reports on larger series of patients show that the mortality of this dreaded complication of our field has been reduced by sulfanilamide from 95 percent to about 50 or 60 percent. Yet, the concensus of opinion is that sulfanilamide is not sufficient. (JACOBIUS, MAGNUSSEN, ROSENWASSER, HUBERT, PHILIPSON, ETC). Removal of the primary focus of infection is necessary (CAWTHORNE). The classical surgical interventions are still of full value: mastoidectomy, with craniectomy and decompression by trephining (CANUYT). Since about 50 percent of otogenous meningitis is caused by petrositis and purulent labyrinthitis, about 50 percent of our surgery will be on the petrous bone (PIETRANTONI). We should not forget that there are still many reports of success from surgery combined with other time-approved measures such as blood transfusions, or serum therapy (BRUNNER). Similarly in *sepsis,* the removal of the infective focus is the most important (HOFER). Surgery on the jugular vein, or an abscess tonsillectomy, as well as general good nursing, feeding, and parenteral fluids did not lose their value. There are still many reports that patients died from sepsis in spite of sulfanilamide therapy (HOFMANN, D'ARCY).

In infections of the mouth floor (Ludwig's angina), where hemolytic streptococcus may play only a partial role, sulfanilamide therapy seems valuable when used as an adjuvant of other measures such as drainage and tracheotomy (WILLIAMS).

In *nasal sinus* diseases, due to beta hemolytic streptococci, pneumococci and staphylococci, relief of pain and drainage are still necessary in spite of the few successes reported from the use of sulfanilamides in acute infections (ORTON, WILLIAMS). Oral administration of the drug is recommended by a few. Locally, after irrigation of the antrum, the drug may be beneficial (GREENS' EYE HOSPITAL). In chronic sinus, reports have been discouraging.

In *gonorrheal ophthalmia* the success of sulfanilamides is unparalleled. The clinical improvement noted after the administration of sulfanilamide, is frequently dramatic; in 24 hours time there is usually a definite improvement. Even if there is ulceration of the cornea, Bailey and Saskin, of Brooklyn claim a most gratifying result. The hospitalization of the patients is greatly shortened, and, according to LILLIE, the average stay in the hospital at Philadelphia is now about from two to five days. The drug is best used perorally, and in combination with the old routine treatment—lavage—(VEIL, SIE BON LIAN, ULRICH, JENSEN). BARBOUR recommends that large doses should be given so as to keep the blood level at 10 mg percent. Several authors experimented with sulfanilamide eye drops, or lavage, or ointment (REIN, KATTIOFSKY, HELMAN), but with such method of administration the cure does not come so quickly. Either sulfanilamide, or sulfapyridine can be used, but sulfapyridine gives more strik-

ing results. The drug treatment should begin at the earliest stage of gonorrheal ophthalmia, before any corneal complication sets in. According to Van Lint, in a case of chronic gonorrheal ophthalmia treated with sulfanilamide and anti-gonococcic vaccine, an acute iritis developed, followed after a few days by complete cataract. In treating gonorrheal ocular complications one should not employ sulfanilamide and shock (vaccines, milk injections) simultaneously.

Houser of Philadelphia, submitted a questionnaire to each member of the American Otological Society; to five additional otolaryngologists in each state of the Union; to 15 otologists in Canada; and to about 150 outstanding members of the American Academy of pediatrics. The results of this questionnaire showed: 1. Almost 90 percent of the physicians co-operating in the survey are using sulfanilamide in the treatment of acute otitis media. 2. Sixty percent of the pediatricians and otologists, who have had experience with sulfanilamide, believe that its use reduces the incidence of acute surgical mastoiditis (SELETZ, VAISBERG, MAYBAUM, HIRST, HORAN). 3. The majority believe that if used, it should be used early, before mastoiditis has had a chance to develop; 58.5 percent use the drug, before the results of the cultures are secured. 4. In a series of 9,667 cases, a mortality rate of 0.041 percent, or one death in 2,417 cases were reported. The chief advantage of sulfanilamide in acute otitis is that one can safely wait. Previously, one was often forced to make an early mastoid operation, which is not to be recommended generally (DAGGETT). Success of sulfanilamide prophylaxis, of course, depends on the type of bacterium, and HENRY showed that about 47 percent of his series would have no benefit from sulfanilamide or sulfapyridine; only 37 percent were streptococcic infections, and 12 percent pneumococcic infections. In DUGGAN'S series, only 11 of 106 cases needed operations. HEBBLE made the rule that if the patient's ear has been discharging for less than four weeks, continuous sulfanilamide therapy throughout several weeks is still feasible. If the otorrhea is over four weeks, sulfanilamide treatment should not delay surgery for more than 10 or 14 days. BOSSEL found that sulfanilamide was excellent also in scarlatinous otitis, and its use resulted in complete restoration of hearing. SIMARD recommends sulfapyridine for treatment of otitis in children. Sulfanilamides have not been used for the treatment of chronic otitis.

Petrositis is a disease in which sulfanilamides should be always tried according to CAMPBELL, since the operation is rather difficult, and everything should be tried to avoid it.

For *pharyngeal* lesions, especially for acute ulcerative pharyngitis, sulfanilamides were recommended by McLAURIN.

Slight improvement followed the use of sulfanilamide in one case of *sympathetic ophthalmia* (COLENBRANDER), but one success does not prove anything.

In *tonsillitis*, sulfanilamides proved to be beneficial (PERKINS, BURCKHARDT). Small doses, three tablets a day for two to three days, may be taken, and after cessation of fever, the dose should be reduced to two tablets a day for three to four days. The reports show that almost all types of acute tonsillitis are favorably influenced by the drugs. Houser and Fitz-Hugh of Philadelphia even report a post-tonsillectomy pulmonary abscess, aborted with sulfapyridine.

Another important disease in which the beneficial effects of sulfanilamides are evident in *trachoma*. Most investigators agree that the course of this disease is affected favorably by the use of sulfanilamide. The sulfanilamides lessen conjunctival redness, cause the discharge to disappear, wipe away corneal lesions such as pannus, heal corneal ulcers, relieve the patient from photophobia, lacrimation, blepharospasm in a short time. Forster, at the Theodore Roosevelt Trachoma School, at Fort Apache, Arizona, found that 50 percent of all the children of school age at the White Mountain Apache Indian Reservation, were afflicted with trachoma. In the past, before sulfanilamide was included in the treatment, it took an average of two and one-half years to arrest the trachoma. He reports as follows: Of the 167 children treated with sulfanilamide, the pathology in 125 became arrested within 30 days of the beginning of the treatment. The remaining 42, in whom conjunctival and corneal activity was still present, were given a second course, and as a result, the disease became inactive. Definite improvement was seen consistently within ten days of the beginning of the therapy. Generally, Stage II of trachoma is quickened into Stage III within a week, and Stage III quickly progresses to cicatrization. It is claimed that satisfactory cure is obtained in three weeks (JASSERON, TOWNSEND) in more than 90 percent of the patients (JUNIOR). As stated previously, it has been said that the nodular type and follicular type of trachoma is resistant to sulfanilamide (SCARDACCIONE), but VANCEA found that, if very large doses of the drug are used, the conjunctival granula will disappear in three months. Whether the virus is also destroyed is not so certain. Indeed, MacCALLUM asserts that the good results of chemotherapy in trachoma are due

to the cure of the secondary infections only, and not to a cure of the virus disease itself. Yet, THYGESON noted that the quickest response to chemotherapy was obtained in cases without secondary bacterial infections. He also found that monkeys treated with sulfanilamide became immune to experimental trachomatous infection. But, even in trachoma, the sulfanilamides cannot replace surgery. Julianelle, St. Louis; Lane, Albuquerque; Whitted, Gallup, New Mexico; Brown and Herrell of Rochester; Lee and Rottenstein of Shanghai and others have reported their investigations favorably in regard to the use of sulfanilamide in the treatment of trachoma.

Cavernous sinus thrombosis, bactremia and erysipelas are some other conditions mentioned in case reports in which the use of sulfanilamide has proven of value.

BIBLIOGRAPHY

Atchinson. J. Michigan M. Soc., 1940, 39: 560-1.
Bajkay T. Fortsch. Ther., 1938, 14: 312-5.
Barbour F. A. Arch. Ophth., Chic., 1939, 22: 581-9.
——— Univ. Hosp. Bull., Ann Arb., 1939, 5: 81-2.
Blaess M. J. Eye & c. Month., 1939 18: 297-8.
Blankenhorn M. A. J. Med., Cincin., 1939, 20: 416-7.
Bossel F. L. Dia med., B. Air., 1940, 12: 153.
Brunner H. Illinois M. J., 1940, 77: 57.
Burckhardt J. L. Praxis, Bern, 1940, 29: 79-81.
Burnet E. Arch. Inst. Pasteur, Tunis, 1940, 29: 66-101.
Burnier. Dia med., B. Air., 1940, 12: 14.
Busacca A. Rev. internat. trachome, 1939, 16: 168-70.
Campbell E. H. Pennsylvania M. J., 1941, 44: 581.
Canuyt G. Ann. otolar., Par., 1939, 654; 662-4.
——— Ibid., 1940, 70.
Castelli A. Boll. oculist., 1939, 18: 523-30.
Cawthorne T. J. Lar. Otol., Lond., 1939, 54: 444-70.
Cecchetto E. Rass. ital. ottalm., 1940, 9: 97-100.
Colenbrander M. C. Ned. tschr. geneesk., 1939, 83: 5939-40.
Converse J. M. J. Am. M. Ass., 1939, 113: 1383-7.
Cunning D. S. Arch. Otolar., Chic., 1939, 30: 950.
Daggett W. I. Med. Press & Circ., Lond., 1940, 203: 355-9.
D'Arcy T. N. J. R. Nav. M. Serv., 1937, 23: 346-7.
Droesbeque G. Otorinolar. internat., Par., 1940, 28: 16.
Duggan D. H. T. Irish J. M. Sc., 1940, No. 174, 261:302.
Elyan M. Brit. M. J., 1938, 1: 146.
Ersner M. S. Laryngoscope. 1940, 50: 302-6.
Evans J. D. Memphis M. J., 1939, 14: 197-8.
Evrard E. J. belge neur., 1939, 39: 622-9.
Fowler E. P. Bull. N. York Acad. M., 1940, 16: 24-37.
Gardner H. M. Edinburgh M. J., 1939, 46: 648-54.
Greens' Eye Hospital, Bull. Pract. Ophth., 1938, 8: 33: 1940, 10:32.
Grimaud. Ann otolar., Par., 1940, 73-80.
Hamby W. B. N. York Acad. M., 1940, 40: 627-31.
——— New York State J. M., 1940, 40: 627-31.
Hebble H. M. Arch. Otolar., 1940, 31: 808-18.
Helman J. South Afr. M. J., 1940, 14: 35.
Henry L. D. Ann. otol. rhinol., 1940, 49: 519-25.
Hirst O. C. Arch. Otolar., Chic., 1939, 30: 755-61.
Hofer. Maschr. Ohrenh., 1939, 73: 562-3.
Hofmann E. Fortsch. Ther., 1935, 11: 762.
Horan V. G. Lancet, Lond., 1940, 1: 680-3.
Houser K. M. Laryngoscope, 1939, 49: 825-52.
——— Arch. Otolar., Chic., 1940, 31: 855-7.
Hoyne A. Arch. Otolar., Chic., 1938, 27: 240:
Jacobius L. Med. Rec. N. Y., 1939, 150: 289-91.
Jasseron. Ref. internat. trachome, 1939, 16: 170.
Jensen V. R. Ugeskr. laeger, 1939, 101: 1255-6.
Julianelle L. A. Am. J. Ophth., 1939, 22: 1244-55.
Junior L. Arq. Inst. Penido Burnier, 1939, 5: 164-83.
Kattiofsky W. Klin. Mbl. Augenh., 1939, 103: 214-20.
Kettler J. R. J. Indiana M. Ass., 1940, 33: 227-9.
Kirketerp P. Ugeskr. laeger, 1939, 101: 1259-61.
Leasure J. K. Tr. Indiana Acad. Ophth., 1938, 22: 37-54.
Levi A. Boll. mal. orecchia, 1939, 57: 398.
Levin M. Minnesota M., 1940, 23: 410-3.
Levitt W. M. (Brit. M. J., 1940, 1: 414.
Lewy A. Laryngoscope, 1939, 49: 871-3.
Lillie W. S. Pennsylvania M. J., 1941, 44: 580.
Lucas C. C. Bull. Acad. M. Toronto, 1940, 13: 103-107.
MacCallan A. F. Brit. M. J., 1940, 1: 482-3.
McLaurin, J. G. Ann. Otol. Rhinol., 1939, 48: 23-34.
McMahon B. J. Arch. Otolar., 1938, 28: 222-33.
Maggiorotti U. Valsalva, 1939, 15: 410-21.
Magnussen F. U. Ugeskr. laeger, 1939, 101: 1258-9.
Mangini A. Riv. biol., Fir., 1940, 29: 1-10.
Maybaum J. L. Arch. Otolar., Chic., 1939, 30: 21; 557.
Mengel W. G. Arch. Ophth., Chic., 1939, 22: 406-9.
Mezzana L. Riforma med., 1940, 72: 109-15.
Perkins H. N. J. R. Army M. C., 1937, 69: 267-8.
Philipson J. Acta otolar., Stockh., 1940, 28: 74-8.
——— Ibid., 1939, 27: 654-61.
Pietrantoni L. Valsalva, 1939, 15: 353-76.
Pinkhof J. Ophthalmologica, Basel, 1939, 97: 356-63.
Rein W. J. Am. J. Ophth., 1939, 22: 1126-9.
Riecke H. G. Zschr. Hasl & c. Heilk., 1935, 38: 1757.
Robb J. P. Canad. M. Ass. J., 1940, 42: 268.
Roggenkaemper. Klin. Mbl. Augenh., 1939, 103: 211-3.
Rosen S. Laryngoscope, 1940, 50: 198-9.
Rosenwasser H. J. Mount Sinai Hosp., 1939, 6: 203-5.
Scardaccione M. Gior med. mil., 1939, 87: 1158-67.
Seletz A. A. West Virginia M. J., 1940, 36: 120-26.
Sie Boen Lian. Ophthalmologica, Basel, 1939, 97: 341-6.
Silvermann D. Arch. Otolar., Chic., 1939, 431-6.
Sjoeberg A. A. Acta otolar., 1939, 27: 638-53.
Spearman M. P. J. Am. M. Ass., 1939, 113: 1807-8.
Szinegh B. Arch. Ophth., Berl., 1939, 141: 109-16; 300-4.
Swan K. C. Am. J. Ophth., 1939, 22: 1255.
Sykes C. S. Texas J. M., 1940, 35: 780-3.
Thatcher D. S. Marquette M. Rev., 1939, 3: 93-114.
Thygeson P. Arch. Ophth., 1939, 22: 923.
Townsend J. G. Sightsav. Rev., 1939, 9: 280-9.
Ulrich. Klin. Mbl. Augenh., 1939, 103: 245-6.
Vainberg M. Laryngoscope, 1938, 48: 54-8.
Vancea P. Spitalul. Bucuresti, 1940, 60: 235-8.
Vasile B. Med. infant., Roma, 1939, 10: 356-65.
Veil P. J. med. Paris, 1939, 110: 425-7.
West A. Sightsav. Rev., 1939, 9: 305-8.
Williams A. C. Surg. Gyn. Obst., 1940, 70: 140-9.
Williams C. B. Eye & c. Month., 1938, 17: 170.
Wilson R. P. Bull. Soc. Ophth. Egypt, 1939, 32: 79-88.
Cooper W. L. Arch. of Ophth., 1940, v. 24, Sept., pp-467-472.
Kettler J. R. and Rutherford, C. W. Jour. Indiana State Med. Assoc., 1940, v. 33, May, p. 227.
Que K. L. Ophthalmologica, 1940, v. 99, May, p. 479.
Van Lint A. Bull. Soc. Belge d' Opht., 1940, no. 79, p. 150.

Pre-and Post-Operative Management of Hyperthyroidism*

C. E. NORTHCUTT, M.D.

PONCA CITY, OKLAHOMA

Surgical thyroid is as different in its various clinical manifestations as it is in its pathological appearances, and, in considering pre-operative preparation, the response will vary, depending upon the class of thyroid one is considering. The adenomatous thyroid should not be permitted to develop to the point of a very great toxicity, or pressure, or evidence of malignancy, as early removal does no necessitate much pre-operative

*Read before the Section on General Surgery, Annual Session, Oklahoma State Medical Association, May 20, 1941, in Oklahoma City.

preparation, and surgical mortality is low. When the adenomatous gland becomes toxic, there will be a superimposed exophthalmia and frequent cardiac changes. On the other hand, the exophthalmic type of hyperthyroidism responds much more favorably to pre-operative preparation.

There is no such thing as an emergency thyroidectomy. The thyroid patient must be considered individually, and therapeutic measures must always be undertaken with this in mind. When the surgeon has made his decision that a portion of the gland must be removed, the problem then becomes one of deciding whether a ligation, or lobectomy, or sub-total thyroidectomy should be done. Pre-operative preparation can then be carried out in such a way that the operation can be done as safely and completely as possible, protecting in every way the physiologic and biochemical processes, which are altered by metabolic upset, by lowering the metabolic requirements of the patient and restoring to a normal level physiologic and chemical functions that have been greatly altered by the progress of the disease.

Pre-operative care may be divided in three phases: (1) Rest, (2) Administration of iodine, and (3) Diet.

Rest: Fatigue is one of the prominent symptoms of the patient with toxic goiter. Rest in bed becomes the most effective physical rest and is an important pre-operative measure because of the lowered caloric requirements on the part of the body and the protection of the muscles from fatigue, and, finally, because of the relief from the burden thrown on the cardio-vascular system by this unusual relation between muscle exertion and volume of blood flow. Besides physical rest, great care must be taken to provide the patient with mental relaxation. He should be placed in a cheerful room or ward, well away from patients who are seriously ill or who would tend to cause depression or excitement. Visiting friends and relatives should be selected with great care and visits made extremely short. Detailed discussion of the patient's condition should be avoided in his presence, as the remarks are frequently misinterpreted and cause great concern. When the patient's emotions become more stable, he should be informed, in a casual manner, that it is planned to remove the thyroid gland sometime in the near future, but statement of the exact date of operation should be avoided, lest it cause worry. There is nothing more detrimental to the welfare of the patient with toxic thyroid disease than the administration of epinephrin, either by the physician or spontaneously by the patient through excitement of his emotions. The most satisfactory sedatives are the barbiturates, such as ¾ gr. phenobarbital three times daily; if this is not tolerated well, small doses of chloral hydrate and bromide mixtures have proven favorable.

Administration of Iodine: Since the introduction of iodine, much credit is due PALMER, KIMBALL, and BOOTHBY for their splendid work in this field. Many patients who were previously considered inoperable can now be treated surgically, and the frequency of post-operative complications has been greatly reduced. Lugol's solution should be given in 1 c.c. doses three times daily over a period of from five to fourteen days, depending upon the severity of toxicity. During this period the pulse and metabolism are greatly reduced, and the patient gains weight and becomes confident of future well-being. The thyroid gland becomes less vascular and firmer to palpation.

Diet: Every patient with toxic thyroid disease presents a nutritional problem which is much greater in the more toxic and older patient, as the tissue breakdown exceeds the ability of the body to rebuild; the lower this reserve, the greater the operative risk. With the increase in the metabolic rate the caloric requirement is many times greater than that of a normal person. This caloric requirement should not only be maintained but should also be supplied to build up the depleted reserve. The need of carbohydrates in the thyrotoxic person is excessive, due partly to the increased consumption resulting from increased metabolic demand and partly to loss of glycogen as the result of epinephrin effect. Carbohydrate depletion can often be demonstrated in the liver, and much work is being done in blood and urine chemical tests, such as the liver function hippuric acid test, which greatly aids in determining the safest stage for operation. The patient's diet must contain a considerable amount of carbohydrates, such as large quantities of well sweetened fruit juices. In the more toxic patient intravenous solutions of ten percent glucose and a well balanced general diet, particularly one containing Vitamins A, B, and C, are of benefit. It has been considered that Vitamin A in cases of thyroid disease is related in some way to metabolism of the liver and, in particular, to glycogen metabolism. When the metabolic rate is increased considerably, as it is in patients with toxic thyroid disease, the ordinary balanced diet is insufficient in Vitamin B to take care of the body needs, and it should be administered pre-operatively with Vitamin C, as patients with toxic goiter show a level of Vitamin C in the blood that is much lower than normal; pre-operatively given, Vitamin C restores this level, increases the tone of the involuntary muscles, and aids in wound healing.

When the patient is considered to be in the best stage for operation, a well-selected, special nurse should be placed in attendance and immediate pre-operative care instituted, as follows: Give a large dose of phenobarbital at bedtime the night preceding operation, to be repeated during the night as necessary to obtain relaxation; 3 c.c. of Lugol's solution in fruit juice early the morning of operation; phenobarbital, 3 gr., two hours before operation, and pantopon, 1/3 gr., with scopolamine, 1/100 gr., one hour before operation. With this preparation the operation can be well carried out under local infiltration. The post-operative reaction will depend greatly upon the extent and length of operation and the amount of nerve trauma.

In the case of a patient with exophthalmic goiter, it is most essential, when he has returned from the operating room, that iodine be given at once and continued in sufficient dosage to control all symptoms of toxicity; when it is not tolerated well by mouth, it should be given by proctoclysis, or by subcutaneous route, or even intravenously. Also repeated doses of pantopon should be given, sufficient to make the patient comfortable, along with forced fluids and carbohydrates. It is frequently necessary to give ten percent glucose intravenously to hold up the metabolic carbohydrate requirement. As a rule, the usual case of exophthalmic goiter responds favorably to this. The patient with an adenomatous toxic thyroid frequently responds favorably for the first two days and then the pulse becomes more rapid, the temperature increases, and tremor is much more noticeable; although this type of patient does not respond so well to iodine, it should be given in smaller doses, and one ice pack used for each degree of temperature, along with subcutaneous saline, cool enemas, and oxygen.

During the convalescent period one should make every effort to encourage the patient to gain weight and strength. If the exophthalmic goiter patient fails to do this, one may expect a persistence of the disease and, later, development of a recurrence.

In the case of a toxic adenoma, the use of iodine may be discontinued in a few days, as recurrence rarely develops. If it does develop, the surgeon is apt to have overlooked the removal of all the adenomatous tissue. In Graves' disease, however, iodine should be continued in small doses for at least three months, with high caloric diet, tonics, and vitamins. The patient should be kept under close observation for the possibility of recurrence and for symptoms of deficiency in thyroid function such as overweight and evidence of myxedema. The giving of iodine for a period of three months will avoid recurrence, and if symptoms of deficiency become evident they may be easily controlled by the use of thyroid extract under close observation. The care of the heart in both types of goiter is important, and, especially in the older patient, with the adenomatous type, it is advisable to give digitalis both preoperatively and post-operatively. In order to obtain the maximum benefit, it is necessary to have close cooperation of the patient, the family physician, and the surgeon over a period of a year to obtain better results with fewer recurrences.

CONCLUSIONS

1. It is important to classify definitely the type of goiter with which one is dealing, as the response to preoperative treatment will vary.
2. It is necessary that psychological management and treatment be administered on the part of the family physician, the surgeon, and the hospital attendants.
3. It is important to evaluate laboratory aids, such as the metabolism test, blood and urine chemistry tests, in the determination of the safest stage for operation.
4. It is important that the patient remain under the close observation of his family physician or the surgeon for a period of the first year.

Timely!

Vitamin B1, not stored by the human body in adequate quantities, is available at every meal, in

Butter-Krust
VITA-B
A New Kind of WHITE BREAD

Contains more than 600 International Units of Vitamin B1 per loaf. Also all the other vitamins found in wheat.

EDITORIALS

HEPARIN AS A PROPHYLACTIC IN PULMONARY EMBOLISM

Pulmonary embolism is a condition which should interest every doctor. It rarely occurs in children. Because of the nature of its origin, it is more frequent after the age of forty.

It should be remembered that pulmonary embolism is not necessarily dependent upon operation of trauma. Less than fifty percent cent of Plewes (1) cases were hospitalized Thrombophilia may represent a deficiency in antithrombin or heparin in the blood. This is suggested by the finding of gallbladder and liver disease in sixty percent of cases autopsied. Slowing of the rate of venous flow is an obvious factor. Twenty-five percent of Plewes (1) cases were hospitalized because of heart lesions, and fifty percent of the autopsied cases showed heart lesions. In fifteen percent of the latter, embolism resulted from a mural thrombus in the right heart. Though less than fifty percent of his cases were post-operative, the mortality was relatively higher in this group.

Contributing postoperative factors are the immobilization of the patient, low blood pressure following major operations, anesthesia and sedatives. All tend to slow return circulation and predispose to venous thrombosis. Spinal anesthesia disturbs circulation and is followed by a high incidence of pulmonary embolism. Fifty percent of postoperative cases of pulmonary embolism developed in the first week, but the time of onset varied from one to fifty-seven days.

Embolism is rare in cases not confined to bed. Heparin (2) normally found in the mast cells of connective tissue in the human body, is supposed to behave like a hormone, lessening the coagulability of the blood and thus reducing the danger of venous thrombosis. This action, though unknown until recently, is most important. Embolism is always preceded by venous thrombosis, consequently the prevention of spontaneous venous thrombosis represents the only prophylaxis against embolism.

Heparin can be extracted from the liver and lungs of cattle (2). Charles and Scott (3), working with Best of Toronto, obtained a sufficient quantity for chemical tests and clinical experimentation. After several years of careful production of heparin, exhaustive experimental studies and clinical tests, it has been shown that intravenous use of this substance produces no ill effects and that so given, in proper dosage at stated intervals, it is of great prophylactic value. If given before or during operation, it predisposes to postoperative hemorrhage, but if the first dose is given four hours after operation, this danger is obviated.

In the light of statistical studies (2), this prophylactic procedure should be considered in every surgical case where age and other predisposing factors suggest the danger of venous thrombosis and embolism. At the present time, the high cost of this valuable agent may be prohibitive for some patients. —L. J. Moorman.

(1) Plewes, Burns. Canad. M.A.J. 41:271-274, Sept., 1939.

(2) Crafoord, Clarence, and Jorpes, Erik: Jr. A.M.A., Vol. 116, No. 26, June 28, 1941.

(3) Charles, A. F., and Scott, D. A.: J. Biol. Chem. 102:425, 1933; Scott, D. A., and Charles, A. F., ibid. 102:437, 1933.

PONTINE DUCKS

In the days when all rulers feared death from poisonous potions secretly administered, they not only kept court tasters, but large botanical gardens in which they grew medicinal and poisonous plants and shrubs. The latter were for the concoction of antidotes and occasionally for experimental purpose.

"Attalos III, Philometer of Pergamas, who lived in constant anxiety from the machinations of his enemies, cultivated with his own hands poisonous plants . . . in the royal gardens, 'collecting the juice and fruit to study their powers,' in order to gain familiarity with the effects of poisons and to discover antidotes he instituted experiments upon criminals." (1)

It was in this period that Erasistratas and Herophalas of Alexandria were permitted to disect the bodies of criminals for the study of living anatomy and physiology.

It is reported that Mithradates, King of Pontos (2) compounded an universal antidote containing fifty-four ingredients from his garden. His Pontine ducks had been fed on various poisons until they had become immune. Not fully trusting his antidoe, Mithradates mixed with it the blood of his immune ducks. A remarkable demonstration of insight, which antedated Dr. Henry Sewall's immunization of pigeons with rattlesnake venom by approximately 2,200 years.

These rulers were driven to the task of research by an abiding apprehension. Dr. Sewall was imbued with a thirst for knowledge.—L. J. Moorman.

(1) Max Neuberger. History of Medicine. Oxford Univ. Press, 1910. P. 193.

(2) Max Neuberger. History of Medicine, Oxford Univ. Press, 1910. P. 193.

• THE PRESIDENT'S PAGE •

When this goes to press, the vacation season for the year will have about ended. Those who have been fortunate and wise enough to avail themselves of a respite from their daily duties will have returned to their offices. With each new year every doctor must assume additional obligations. The requirements of this rapidly changing age are such that we have no opportunity to halt, for if we do, the procession will pass us by.

Our profession, along with all other activities, is undergoing changes and if we are to escape being left behind, we must lead the procession and direct the changes.

The future of medicine in our country is so threatened that we must practice eternal vigilance and not allow ourselves to be lulled into a sense of false security. Those who are constantly endeavoring to attain professional standing which they have not earned and those in our professison who are willing to prostitute this honorable profession for personal financial gains adhere to the doctrine of falsification and distortion, add and subtract, twist and warp facts with the rapidity of a whirling dervish. Organized American Medicine will meet these challenges in the good old American way.

It is a very satisfying feeling to see the fine spirit of cooperation our government is receiving from the medical profession in the present emergency.

At a time when thorough preparedness means so much to the welfare of the nation and to the life of democracy itself, American Medicine is proud of this opportunity to participate wholeheartedly in this great National Defense Program.

Finis. Keuing

President.

ASSOCIATION ACTIVITIES

SPECIAL COMMITTEE MEETS WITH WELFARE DEPARTMENT

In line with the adoption of the Council's report by the House of Delegates, Dr. Finis W. Ewing, President, Muskogee, has recommended to Mr. Jess Harper, Director of the Public Welfare Department, the names of Dr. A. R. Sugg, Ada, Dr. R. M. Shepard, Tulsa, Dr. Clinton Gallaher, Shawnee, and Dr. F. Redding Hood and Dr. C. H. Rountree, both of Oklahoma City, for appointment by the Director as a Medical Advisory Committee to the Department.

The Public Welfare Department, which is charged with the responsibility of administering among its many activities the Aid to Dependant Children fund, requested assistance from the Association in the form of an Advisory Committee for the purpose of more adequately ascertaining the physical disability of the parents of the children making applications for assistance.

The first meeting of the committee was held July 20, at which time a conference was held with the officials of the Public Welfare Department, and a preliminary survey of the activities of the committee discussed.

Dr. C. H. Rountree was named Chairman of the committee, and the next meeting will be held August 3.

STATE INSURANCE FUND REPORTS EXPENDITURES

The following report of the operation of the State Insurance Fund is of extreme interest to the profession because it gives a clear and concise picture of the operation of the fund during its existence.

Particular attention is called to the report of the fund from April 15, 1940 to July 1, 1941, the time during which the fund has been under the management of Mr. Mott Keys, present Commissioner. The fact that the fund, as now operated, is paying its medical and hospital bills promptly is an indication that, under Mr. Keys' direction, its problems are at least being attacked on a business-like basis.

Mr. Keys is to be congratulated on his splendid administration, and the doctors of the state on the fact that they are the direct beneficiaries of this method of management.

From July 1, 1933 to July 1, 1941 (8 Years)

Medical and hospitalization bills	$ 764,603.38
Compensation and attorney fees	2,024,742.41*
Operating, Salaries, etc.	410,280.39
Total	$3,199,626.18

Medical bills have averaged $95,586.00 per year for eight years.

Medical bills have averaged $7,965.00 per month for eight years.

Compensation bills have averaged $253,092.00 per year for eight years.

Compensation bills have averaged $21,091.00 per month for eight years.

Operating and salaries have averaged $51,285.00 per year for eight years.

Operating and salaries have averaged $4,273.00 per month for eight years.

From April 15, 1940 to July 1, 1941 (14½ Months)
(Under present management)

Medical and Hospitalization bills	$121,907.51
Compensation and attorney fees	333,991.22
Operating and salaries	64,143.30
Total	$520,042.03

*Of the $2,024,742.41 paid out in the past 8 years in compensation and attorney fees, approximately $645,000.00 has been paid for the settlement of over 1,070 JOINT PETITION CASES.

SUPPLEMENTARY ROSTER OF 1941 MEMBERSHIP

The following is a list of 1941 Memberships that came to the Executive Office after the publication of the Roster in the June issue of the Journal:

BLAINE

BUCHANAN, FRANK ..... *Canton*
STOUGH, FREEMAN, JR. ..... *Geary*

CANADIAN

FUNK, G. D. ..... *El Reno*

CARTER

JOHNSON, G. E. ..... 1305 *McLish Ave., S.W., Ardmore*

CHEROKEE

BARNES, HARRY E. ..... *Tahlequah*

GARFIELD

BAKER, R. C. ..... *Enid*

GRADY

OHL, CHARLES W. ..... *Camp Barkeley, Abilene, Tex.*

GRANT

ROBINSON, F. P. ..... *Nash*

KAY

MOHLER, E. C. ..... *2d Observation Battalion, Fort Sill*

LOGAN

LARKIN H. W. ..... *Minco*

OKLAHOMA

CLOUDMAN H. H. ..... *Camp Barkeley, Abilene, Tex.*
COLEY, JOE H. ..... 4086 *Jackdaw St., San Diego, Calif.*
MILES, W. H. ..... *Camp Barkeley, Abilene, Tex.*
MILLER, NESBITT L. ..... *Camp Barkeley, Abilene, Tex.*
WATSON, I. NEWTON ..... *Fort Sill*

OTTAWA

LANNING, J. M. ..... *Picher*

PAYNE

BASSETT, C. M. ..... *Cushing*
SILVERTHORN, LOUIS E. ..... *Stillwater*

TULSA

BEYER, J. W. ..... 621 *McBirney Bldg.*
DAVIS, T. H. ..... *Camp Barkeley, Abilene, Tex.*
EWELL, W. C. ..... *55th Med. Battn,. Ft. Sam Houston, Tex.*
FORD, R. B. ..... *U.S. Naval Station, Corpus Christi, Tex.*
PITTMAN, COLE D. ..... *Chanute Field, Rantoul, Ill.*
WILLIAMS, THEO S. ..... *Mercy Hospital*

WOODWARD

WALKER, HARDIN ..... *Warland, Wyo.*

Dr. G. W. Scott Is Johnston County Resident

The Journal is pleased to make this correction to the Membership Roster printed in the June issue:

G. W. Scott, M.D., who was listed as a member of the Bryan County Medical Society, is a resident in Johnston county. He is a member of the Bryan county society, but resides in Tishomingo in Johnston county.

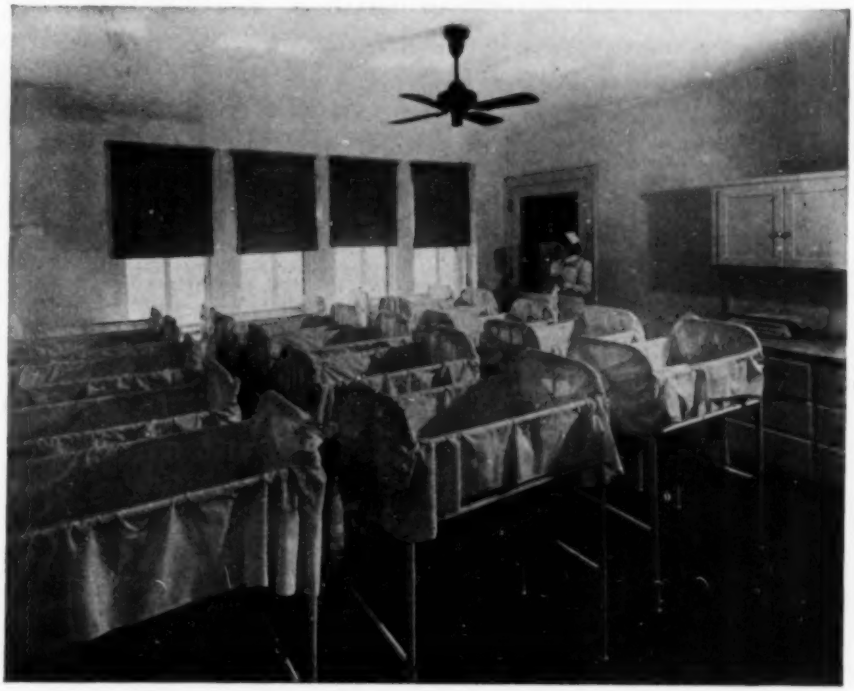
Southern Medical Association Meeting Date Changed

A change in the meeting dates of the Southern Medical Association meeting in St. Louis has been announced by C. P. Loranz, Secretary-Manager of the Association.

The meeting will open Monday, November 10, and close late in the afternoon of Thursday, November 13. Previous plans had been to open the meeting Tuesday, November 11 and close it at noon, Friday, November 14.

The registration, scientific exhibits, clinical sessions, section and all conjoint meetings will be held at the Municipal Auditorium. The evening activities, including the General Sessions, the President's Reception and Ball and the Alumni Reunion Dinners will be held at the Jefferson hotel.

Registration opens immediately at noon, November 10, with the scientific programs beginning at 2 o'clock that afternoon.



View of Bassinets where Polyclinic Babies Get Off to Good Start.

CHEERFUL NURSERY IS AIR CONDITIONED

Polyclinic's nursery is a delightful place. It is refreshingly air conditioned from a central plant, which assures reliable temperature and humidity control. Fretfulness caused by heat discomforts is unknown here. Isolation technique is maintained for each bassinet.

Equipment is such as to assure absolute purity and cleanliness. The closest attention is paid to nursing care and proper feeding. In every detail adequate attention for the newly born infant is stressed.

MARVIN E. STOUT, M.D.
Owner

JOHN A. CUNNINGHAM, M.D.
House Surgeon

POLYCLINIC HOSPITAL

THIRTEENTH and ROBINSON OKLAHOMA CITY

ROCKY MOUNTAIN MEDICAL CONFERENCE WILL MEET SEPTEMBER 2-4

On September 2, 3 and 4, the Rocky Mountain Medical Conference will convene for its Third Biennial Conference at the Canyon Hotel in Yellowstone Park.

Open to all members of the American Medical Association, the Conference will present a completely scientific program of talks by physicians of national reputation and scientific and commercial exhibits.

Guest speakers will include: James G. Carr, M.D., Chicago, Professor of Medicine at Northwestern University Medical School and Director of the Florsheim Foundation for Cardiac Research; Frank H. Lahey, M.D., Boston, President of the American Medical Association and Director of Clinical Surgery at the Lahey Clinic; Guy A. Caldwell, M.D., New Orleans, Professor of Clinical Orthopedics at Tulane University and Secretary of the American Board of Orthopedic Surgery.

Winchell McKendree Craig, M.D., Rochester, Minn., Professor of Neurosurgery Mayo Foundation Graduate School, University of Minnesota, and neurologic surgeon at the Mayo Clinic, Colonial Kahler, and St. Mary's Hospitals; Alexis F. Hartmann, M.D., St. Louis, Professor of Pediatrics and Head of the Department, Washington University School of Medicine; Clarence M. Hyland, M.D., Los Angeles, Director of the Convalescent Serum Center and Laboratories, Children's Hospital.

Arnold S. Jackson, M.D., Madison, Wis., Attending Surgeon at the Methodist Hospital and Jackson Clinic; Roscoe G. Leland, M.D., Chicago, Director of the Bureau of Medical Preparedness of the American Medical Association; Norman F. Miller, M.D., Ann Arbor, Mich., Professor of Obstetrics and Gynecology at the University of Michigan Medical School; and John R. Nilsson, M.D., Omaha, Neb., Chief Surgeon of the Union Pacific Railroad Company and Professor of Surgery at the University of Nebraska College of Medicine.

The Conference was organized in 1935 and is composed of the state medical societies of Colorado, New Mexico, Utah, Wyoming and Montanna.

For further information concerning the program and schedule of the Conference, any physician interested may inquire at the Executive Offices, 210 Plaza Court, Oklahoma City.

Work Begins On New Laboratories Of Searle and Company

G. D. Searle and Company, Chicago, have announced that work has begun on the building of their new laboratories and plant on the outskirts of Chicago in the Skokie district.

Completely modern in design, the plant will be constructed not as a factory-like building but as a scientific laboratory for the development and production of pharmaceutical products under the most modern scientific and hygenic conditions.

The laboratory atmosphere will be carried out throughout the building, except in the auditorium which is designed for meetings of the staff and workers and clinical meetings and demonstrations to visiting physicians and interested medical groups.

There will be laboratory units for organic chemistry, bio-chemistry, bacteriology, pharmacology and microanalysis. Next to the laboratory units will be a scientific library with facilities for the filing and indexing of journals, books and papers in all languages.

The premises will also contain a completely equipped emergency hospital, which will be operated by the Medical Service Division of the Searle laboratories, and extensive animal rooms for the housing and care of the different test animals used by the scientific staff in the testing of various drugs.

For all members of the organization, a recreational center with lounges, rest-rooms, meeting rooms and dining rooms will be provided.

The building, located in a suburban district, will be erected on a five-acre tract, and the unused portion will be devoted to lawns and flowers and a recreational field.

Thirteen Oklahoma Physicians Called to Service

As printed in the Journal of the American Medical Association thirteen more Oklahoma physicians have been called to military service.

They are :

Bigler, Ivan Edward, 1st Lieut., Ada, Lou Foote Flying Service, Stamford, Texas.

Blair, Clifford Jennings, 1st Lieut., Stapp, 368th Infantry, Fort Huachuca, Arizona.

Bush, Jordan Morgan, 1st Lieut., Oklahoma City, Station Hospital, Fort Sill.

Cavannaugh, John W., 1st Lieut., Oklahoma City, 200th Coast Artillery (AA), Fort Bliss, Texas.

Cook, Edward Tiffin, Jr., 1st Lieut., Anadarko, 368th Infantry, Fort Huachuca, Arizona.

Epps, Curtis Howard, 1st Lieut., Duncan, Station Hospital, Fort Sill.

Farnam, Lorenzo Matthew, Jr., 1st Lieut., Oklahoma City, 36th Division, Camp Bowie, Texas.

Kerr, Walter C. H., 1st Lieut., Picher, 113th Calvary, Camp Bowie, Texas.

Klotz, William F., Captain, McAlester, Station Hospital, Fort Sam Houston, Texas.

Ley, Eugene B., 1st Lieut., Oklahoma City, Station Hospital, Camp Wolters, Texas.

Maril, William David, 1st Lieut., Oklahoma City, 368th Infantry, Fort Huachuca, Arizona.

Murry, Abel V., 1st Lieut., Picher, 260th Corps Area, Fort Bliss, Texas.

Reding, Anthony C., 1st Lieut., Tulsa, 202d Coast Artillery, Fort Bliss, Teaxs.

Nine Oklahoma doctors who were called to the service have had their orders revoked. They are:

Adams, Richard Martin, 1st Lieut., Tulsa.
Atkins, Paul N., Jr., 1st Lieut., Muskogee.
Box, Otho H., Jr., 1st Lieut., Grandfield.
Chaffin, Zale, 1st Lieut., Oklahoma City.
Clark, Ralph O., 1st Lieut., Oklahoma City.
Downing, Gerald G., 1st Lieut., Lawton.
Fox, F. T., 1st Lieut., Lawton.
Hude, William A., 1st Lieut., Durant.
Pryor, V. W., 1st Lieut., Holdenville.

Dr. Ballard Takes New Position As University Athletic Director

Dr. Ray H. Ballard, well-known in the state as an athletic instructor and coach, took over his new duties as student health director at the University of Wyoming, Laramie, Wyo., August 1.

Before he accepted the new position, Doctor Ballard served as director of the Cleveland county health department at Norman, where he had made his home for the past year.

Doctor Ballard has served as athletic director and basketball coach at Phillips university, Enid, and as athletic director and coach of all sports at Northeastern State college, Tahlequah. Later, he became athletic director and physical education instructor at Northeastern college.

He was graduated from the University of Oklahoma School of Medicine in 1939.

Dr. Paul Kernek to Practice With Holdenville Doctor

Dr. Paul Kernek left Oklahoma City July 1 to practice medicine with Dr. Victor W. Pryor in the Pryor-Johnston-Kernek Hospital-Clinic in Holdenville.

Doctor Kernek, until he joined Doctor Pryor, was resident and orthopaedic surgeon at St. Anthony's Hospital, Oklahoma City. He was graduated with an A.B. and M.D. degree from the University of Oklahoma, and served his internship in Charity Hospital, New Orleans. For two years he was identified with the Bone and Joint Hospital in Oklahoma City.

In changing his residence to Holdenville, Dr. Kernek goes back to his home town. He is a brother of Clyde Kernek, also of the staff of the Pryor-Johnston-Kernek Hospital-Clinic, who is now in the medical corps of the army.

News From The State Health Department

Special attention to conditions in areas adjoining defense projects is being given by the Oklahoma State Health department, at the request of military authorities and local officials in the areas concerned.

Matters of sanitation are receiving particular attention as every effort is made to protect the health not only of the men in military training, but the defense industry workers and civilians who reside nearby.

Early in the national defense effort military authorities asked for cooperation of the state health department in plans to protect the health not only of the armed forces, but of civilians as well.

The United States Public Health Service has also assisted in this program.

Late in June, the state health department received five trucks which carry equipment needed to do effective malaria control work. Loaned by the U. S. Public Health Service, the trucks will be used in defense areas.

Oil spray is being used to destroy mosquito breeding places.

Sanitarians in the county health departments have been alert to work for proper sewage disposal in defense areas. This has frequently become a problem, as defense projects would open up new areas to settlement and create sanitation problems. The plan has been to prepare before disease outbreaks occurred. Where laying of a sewer line has not been possible, health department workers have urged installation of proper septic tanks or pit type out door toilets.

Water supplies are being constantly checked, and particular attention is being given to food and milk supplies. Most of the areas concerned have passed standard food handling ordinances and work is being done to improve sanitation in restaurants.

Expert consultation service is offered to defense industrial plants of the state by the relatively new division of industrial hygiene of the state health department.

This division works with industry to remove hazards and conditions which might affect the health of the workers in plants of all types.

A new director of laboratories for the Oklahoma State Health department was named July 1.

Dr. F. R. Hassler became director then, succeeding Dr. W. D. Hayes.

Doctor Hassler was formerly director of the City-County Health department at Shawnee, and just returned from a year of study in the Johns Hopkins University School of Public Health at Baltimore, Maryland.

He has been with the state health department for several years and in addition to being a physician, is an experienced laboratory technician.

Doctor Hayes, who directed the laboratories for nearly four years, is now in the health education department. He will serve as lecturer on health subjects, will conduct schools in food handling sanitation and will act as consultant on public health matters.

Opening of a new county health department in Okmulgee county was announced July 1 by Dr. G. F. Mathews, commissioner.

The new preventive, public health unit will be directed by Dr. Lowell Stokes and will have a staff of public health nurses, a sanitarian and a clerk.

Doctor Stokes was assigned to Okmulgee after directing the Caddo County Health department at Anadarko during the past year.

Dr. William Loy, director of the department at Ardmore for serveral years, has been assigned to the Caddo County Health department.

Continuing the state health department policy of placing specially trained men in charge of the county health departments and special state health service, five physicians returned early in July after spending the past year doing graduate work in public health.

The group includes:

Dr. Frank P. Bertram, director of the dental division of the state health department. Doctor Bertram received his master of public health degree from Harvard university in June.

Dr. William Loy, Director of the Caddo County Health department. Doctor Loy also received his public health degree at Harvard.

Dr. Harry E. Barnes, temporarily director of the Bryan County Health department at Durant. Doctor Barnes received his public health degree at Johns Hopkins university.

Doctor Vance F. Morgan became director of the Comanche County Health department at Lawton after completing work for his public health degree at Johns Hopkins university.

Dr. F. R. Hassler received his master of public health degree and returned as director of laboratories for the state health department.

The medical staff was increased July 1 when Dr. L. H. Gaston of the United States Public Health Service was assigned to work in Oklahoma as part of the cooperative policy planned in defense areas.

Dr. Charles E. Leonard Joins Staff Of Coyne-Campbell Clinic

On July 1, Dr. Charles E. Leonard, formerly of Fort Supply and Chicago, Ill., joined the staff of the Coyne-Campbell clinic, Oklahoma City.

Doctor Leonard, who was graduated from the University of Oklahoma School of Medicine, did post graduate work at the Psychoanalytic Institute in Chicago, and practiced for a year and a half in Fort Supply.

In his new position with the Coyne-Campbell staff, Doctor Leonard will carry on his work in Psychiatry and Neurology.

Eighth Public Health Institute Announced

The Eighth Institute of Public Health Education will be held October 12, 13 and 14 in Atlantic City, N. J., Dr. Reginald M. Atwater, Executive Secretary of the American Public Health Association, has announced.

The Institute, which is a short course of study for all doctors connected with and interested in public health, will precede the 70th Annual Meeting of the American Public Health Association, October 14, 15, 16 and 17, in Atlantic City.

Booklet Stresses Doctors Prescriptions

The importance of having the physician prescribe the proper diaphragm is stressed in a booklet, addressed to pharmacists, by the Holland-Rantos Company entitled "The Pharmacist Looks At Contraceptives."

The Holland-Rantos Company are the pioneers in advocating the diaphragm plus jelly method and have consistently maintained that diaphragms must be properly fitted by physicians.

This monograph is the latest promotion done by the company in its advocacy of "The Physician's Method."

Classified Advertisements

FOR SALE: A short wave unit, portable model with wave length 6.5, type C Circuit, wattage 750, and complete with compartment for carrying pads and cord and a connection for surgery attachments. Any doctor who is interested may inquire for further information at the Executive Offices, 210 Plaza Court, Oklahoma City.

ROCKY MOUNTAIN MEDICAL CONFERENCE WILL MEET SEPTEMBER 2-4

On September 2, 3 and 4, the Rocky Mountain Medical Conference will convene for its Third Biennial Conference at the Canyon Hotel in Yellowstone Park.

Open to all members of the American Medical Association, the Conference will present a completely scientific program of talks by physicians of national reputation and scientific and commercial exhibits.

Guest speakers will include: James G. Carr, M.D., Chicago, Professor of Medicine at Northwestern University Medical School and Director of the Florsheim Foundation for Cardiac Research; Frank H. Lahey, M.D., Boston, President of the American Medical Association and Director of Clinical Surgery at the Lahey Clinic; Guy A. Caldwell, M.D., New Orleans, Professor of Clinical Orthopedics at Tulane University and Secretary of the American Board of Orthopedic Surgery.

Winchell McKendree Craig, M.D., Rochester, Minn., Professor of Neurosurgery Mayo Foundation Graduate School, University of Minnesota, and neurologic surgeon at the Mayo Clinic, Colonial Kahler, and St. Mary's Hospitals; Alexis F. Hartmann, M.D., St. Louis, Professor of Pediatrics and Head of the Department, Washington University School of Medicine; Clarence M. Hyland, M.D., Los Angeles, Director of the Convalescent Serum Center and Laboratories, Children's Hospital.

Arnold S. Jackson, M.D., Madison, Wis., Attending Surgeon at the Methodist Hospital and Jackson Clinic; Roscoe G. Leland, M.D., Chicago, Director of the Bureau of Medical Preparedness of the American Medical Association; Norman F. Miller, M.D., Ann Arbor, Mich., Professor of Obstetrics and Gynecology at the University of Michigan Medical School; and John R. Nilsson, M.D., Omaha, Neb., Chief Surgeon of the Union Pacific Railroad Company and Professor of Surgery at the University of Nebraska College of Medicine.

The Conference was organized in 1935 and is composed of the state medical societies of Colorado, New Mexico, Utah, Wyoming and Montanna.

For further information concerning the program and schedule of the Conference, any physician interested may inquire at the Executive Offices, 210 Plaza Court, Oklahoma City.

Work Begins On New Laboratories Of Searle and Company

G. D. Searle and Company, Chicago, have announced that work has begun on the building of their new laboratories and plant on the outskirts of Chicago in the Skokie district.

Completely modern in design, the plant will be constructed not as a factory-like building but as a scientific laboratory for the development and production of pharmaceutical products under the most modern scientific and hygenic conditions.

The laboratory atmosphere will be carried out throughout the building, except in the auditorium which is designed for meetings of the staff and workers and clinical meetings and demonstrations to visiting physicians and interested medical groups.

There will be laboratory units for organic chemistry, bio-chemistry, bacteriology, pharmacology and microanalysis. Next to the laboratory units will be a scientific library with facilities for the filing and indexing of journals, books and papers in all languages.

The premises will also contain a completely equipped emergency hospital, which will be operated by the Medical Service Division of the Searle laboratories, and extensive animal rooms for the housing and care of the different test animals used by the scientific staff in the testing of various drugs.

For all members of the organization, a recreational center with lounges, rest-rooms, meeting rooms and dining rooms will be provided.

The building, located in a suburban district, will be erected on a five-acre tract, and the unused portion will be devoted to lawns and flowers and a recreational field.

Thirteen Oklahoma Physicians Called to Service

As printed in the Journal of the American Medical Association thirteen more Oklahoma physicians have been called to military service.

They are :

Bigler, Ivan Edward, 1st Lieut., Ada, Lou Foote Flying Service, Stamford, Texas.

Blair, Clifford Jennings, 1st Lieut., Stapp, 368th Infantry, Fort Huachuca, Arizona.

Bush, Jordan Morgan, 1st Lieut., Oklahoma City, Station Hospital, Fort Sill.

Cavanaugh, John W., 1st Lieut., Oklahoma City, 200th Coast Artillery (AA), Fort Bliss, Texas.

Cook, Edward Tiffin, Jr., 1st Lieut., Anadarko, 368th Infantry, Fort Huachuca, Arizona.

Epps, Curtis Howard, 1st Lieut., Duncan, Station Hospital, Fort Sill.

Farnam, Lorenzo Matthew, Jr., 1st Lieut., Oklahoma City, 36th Division, Camp Bowie, Texas.

Kerr, Walter C. H., 1st Lieut., Picher, 113th Calvary, Camp Bowie, Texas.

Klotz, William F., Captain, McAlester, Station Hospital, Fort Sam Houston, Texas.

Ley, Eugene B., 1st Lieut., Oklahoma City, Station Hospital, Camp Wolters, Texas.

Maril, William David, 1st Lieut., Oklahoma City, 368th Infantry, Fort Huachuca, Arizona.

Murry, Abel V., 1st Lieut., Picher, 260th Corps Area, Fort Bliss, Texas.

Reding, Anthony C., 1st Lieut., Tulsa, 202d Coast Artillery, Fort Bliss, Texas.

Nine Oklahoma doctors who were called to the service have had their orders revoked. They are:

Adams, Richard Martin, 1st Lieut., Tulsa.
Atkins, Paul N., Jr., 1st Lieut., Muskogee.
Box, Otho H., Jr., 1st Lieut., Grandfield.
Chaffin, Zale, 1st Lieut., Oklahoma City.
Clark, Ralph O., 1st Lieut., Oklahoma City.
Downing, Gerald G., 1st Lieut., Lawton.
Fox, F. T., 1st Lieut., Lawton.
Hude, William A., 1st Lieut., Durant.
Pryor, V. W., 1st Lieut., Holdenville.

Dr. Ballard Takes New Position As University Athletic Director

Dr. Ray H. Ballard, well-known in the state as an athletic instructor and coach, took over his new duties as student health director at the University of Wyoming, Laramie, Wyo., August 1.

Before he accepted the new position, Doctor Ballard served as director of the Cleveland county health department at Norman, where he had made his home for the past year.

Doctor Ballard has served as athletic director and basketball coach at Phillips university, Enid, and as athletic director and coach of all sports at Northeastern State college, Tahlequah. Later, he became athletic director and physical education instructor at Northeastern college.

He was graduated from the University of Oklahoma School of Medicine in 1939.

Dr. Paul Kernek to Practice With Holdenville Doctor

Dr. Paul Kernek left Oklahoma City July 1 to practice medicine with Dr. Victor W. Pryor in the Pryor-Johnston-Kernek Hospital-Clinic in Holdenville.

Doctor Kernek, until he joined Doctor Pryor, was resident and orthopaedic surgeon at St. Anthony's Hospital, Oklahoma City. He was graduated with an A.B. and M.D. degree from the University of Oklahoma, and served his internship in Charity Hospital, New Orleans. For two years he was identified with the Bone and Joint Hospital in Oklahoma City.

In changing his residence to Holdenville, Dr. Kernek goes back to his home town. He is a brother of Clyde Kernek, also of the staff of the Pryor-Johnston-Kernek Hospital-Clinic, who is now in the medical corps of the army.

News From The State Health Department

Special attention to conditions in areas adjoining defense projects is being given by the Oklahoma State Health department, at the request of military authorities and local officials in the areas concerned.

Matters of sanitation are receiving particular attention as every effort is made to protect the health not only of the men in military training, but the defense industry workers and civilians who reside nearby.

Early in the national defense effort military authorities asked for cooperation of the state health department in plans to protect the health not only of the armed forces, but of civilians as well.

The United States Public Health Service has also assisted in this program.

Late in June, the state health department received five trucks which carry equipment needed to do effective malaria control work. Loaned by the U. S. Public Health Service, the trucks will be used in defense areas.

Oil spray is being used to destroy mosquito breeding places.

Sanitarians in the county health departments have been alert to work for proper sewage disposal in defense areas. This has frequently become a problem, as defense projects would open up new areas to settlement and create sanitation problems. The plan has been to prepare before disease outbreaks occurred. Where laying of a sewer line has not been possible, health department workers have urged installation of proper septic tanks or pit type out door toilets.

Water supplies are being constantly checked, and particular attention is being given to food and milk supplies. Most of the areas concerned have passed standard food handling ordinances and work is being done to improve sanitation in restaurants.

Expert consultation service is offered to defense industrial plants of the state by the relatively new division of industrial hygiene of the state health department.

This division works with industry to remove hazards and conditions which might affect the health of the workers in plants of all types.

A new director of laboratories for the Oklahoma State Health department was named July 1.

Dr. F. R. Hassler became director then, succeeding Dr. W. D. Hayes.

Doctor Hassler was formerly director of the City-County Health department at Shawnee, and just returned from a year of study in the Johns Hopkins University School of Public Health at Baltimore, Maryland.

He has been with the state health department for several years and in addition to being a physician, is an experienced laboratory technician.

Doctor Hayes, who directed the laboratories for nearly four years, is now in the health education department. He will serve as lecturer on health subjects, will conduct schools in food handling sanitation and will act as consultant on public health matters.

Opening of a new county health department in Okmulgee county was announced July 1 by Dr. G. F. Mathews, commissioner.

The new preventive, public health unit will be directed by Dr. Lowell Stokes and will have a staff of public health nurses, a sanitarian and a clerk.

Doctor Stokes was assigned to Okmulgee after directing the Caddo County Health department at Anadarko during the past year.

Dr. William Loy, director of the department at Ardmore for serveral years, has been assigned to the Caddo County Health department.

Continuing the state health department policy of placing specially trained men in charge of the county health departments and special state health service, five physicians returned early in July after spending the past year doing graduate work in public health.

The group includes:

Dr. Frank P. Bertram, director of the dental division of the state health department. Doctor Bertram received his master of public health degree from Harvard university in June.

Dr. William Loy, Director of the Caddo County Health department. Doctor Loy also received his public health degree at Harvard.

Dr. Harry E. Barnes, temporarily director of the Bryan County Health department at Durant. Doctor Barnes received his public health degree at Johns Hopkins university.

Doctor Vance F. Morgan became director of the Comanche County Health department at Lawton after completing work for his public health degree at Johns Hopkins university.

Dr. F. R. Hassler received his master of public health degree and returned as director of laboratories for the state health department.

The medical staff was increased July 1 when Dr. L. H. Gaston of the United States Public Health Service was assigned to work in Oklahoma as part of the cooperative policy planned in defense areas.

Dr. Charles E. Leonard Joins Staff Of Coyne-Campbell Clinic

On July 1, Dr. Charles E. Leonard, formerly of Fort Supply and Chicago, Ill., joined the staff of the Coyne-Campbell clinic, Oklahoma City.

Doctor Leonard, who was graduated from the University of Oklahoma School of Medicine, did post graduate work at the Psychoanalytic Institute in Chicago, and practiced for a year and a half in Fort Supply.

In his new position with the Coyne-Campbell staff, Doctor Leonard will carry on his work in Psychiatry and Neurology.

Eighth Public Health Institute Announced

The Eighth Institute of Public Health Education will be held October 12, 13 and 14 in Atlantic City, N. J., Dr. Reginald M. Atwater, Executive Secretary of the American Public Health Association, has announced.

The Institute, which is a short course of study for all doctors connected with and interested in public health, will precede the 70th Annual Meeting of the American Public Health Association, October 14, 15, 16 and 17, in Atlantic City.

Booklet Stresses Doctors Prescriptions

The importance of having the physician prescribe the proper diaphragm is stressed in a booklet, addressed to pharmacists, by the Holland-Rantos Company entitled "The Pharmacist Looks At Contraceptives."

The Holland-Rantos Company are the pioneers in advocating the diaphragm plus jelly method and have consistently maintained that diaphragms must be properly fitted by physicians.

This monograph is the latest promotion done by the company in its advocacy of "The Physician's Method."

Classified Advertisements

FOR SALE: A short wave unit, portable model with wave length 6.5, type C Circuit, wattage 750, and complete with compartment for carrying pads and cord and a connection for surgery attachments. Any doctor who is interested may inquire for further information at the Executive Offices, 210 Plaza Court, Oklahoma City.

University of Oklahoma School of Medicine

The University of Oklahoma School of Medicine finished the academic year of 1940-1941 on June 9, 1941, when 54 students of the School of Medicine were graduated with the Degree of Doctor of Medicine; and 37 from the School of Nursing received the Degree of Graduate Nurse.

On July 1, 1941, the new interns appointed to the University and Crippled Children's Hospitals began their duties.

The following new Residents, Assistant Residents, and Fellows reported for duty:

Felix M. Adams, Jr., Duke University, Pathology.

Harvey Mr. Richey, Jr., University of Texas, Assistant in surgery.

Kenneth Von Pohle, College of Medical Evangelists, Assistant in Obstetrics and Gynecology.

Roy I. Peck, Western Reserve University, Orthopedic Surgery.

Benjamin Raxlen, University of Toronto, Anesthesia.

James K. Skahen, College of Medical Evangelists, Anesthesia.

Peter E. Russo, St. Louis University, Radiology.

Lloyd E. Pace, Baylor University School of Dentistry, Dentistry.

Margaret Zolensky, Medical College of Virginia, Pediatrics.

John T. Jacobs, University of Colorado, Fellow in Orthopedic Surgery.

The following Residents and Assistant Residents are continuing their duties at the University and Crippled Children's Hospitals:

John W. Cavanaugh, (finished Senior Internship), Surgery.

A. L. Swenson, Orthopedics.

Richard C. Stauffer, Orthopedics.

H. Thompson Avey (finished internship this year), Medicine.

D. R. Bedford (finished Floating Internship), Medicine.

John M. Parrish, Jr., (2nd year Residency), Obstetrics and Gynecology.

Rugie R. Coates (2nd year Residency), Eye, Ear, Nose, & Throat.

The following Junior Interns reported for duty:

Edward E. Anderson, University of Iowa.
C. M. Bielstein, Baylor University.
J. Gordon Claypool, University of Kansas.
Daniel L. Tappen, University of Kansas.
Francis J. Daugherty, University of Colorado.
Harrell C. Dodson, University of Oklahoma.
Edwin C. Fair, University of Oklahoma.
Philip Joseph, University of Oklahoma.
John Gordon Hedrick, University of Colorado.
Robert Alvin Rix, University of Texas.

The following, who have served their Junior Internship, started on their Second or Senior Internship Year:

Ralph S. Armstrong.
J. D. Ashley.
James W. Beattie.
Harold Dyer.
J. Andrew Graham.
John B. Jarrott.
Willard C. McClure.
Vincent Mazzarella.
Leland F. Shyrock.
George W. Winkelman.

For the local Treatment of Acute Anterior **Urethritis**
(DUE TO NEISSERIA GONORRHEAE)

SILVER PICRATE* *Wyeth*

A complete technique of treatment and literature will be sent upon request

*Silver Picrate is a definite crystalline compound of silver and picric acid. It is available in the form of crystals and soluble trituration for the preparation of solutions, suppositories, water-soluble jelly, and powder for vaginal insufflation.

Silver Picrate, Wyeth, has a convincing record of effectiveness as a local treatment for acute anterior urethritis caused by Neisseria gonorrheae.[1] An aqueous solution (0.5 percent) of silver picrate or water-soluble jelly (0.5 percent) are employed in the treatment.

1. Knight, F., and Shelanski, H. A., "Treatment of Acute Anterior Urethritis with Silver Picrate," Am. J. Syph., Gon. & Ven. Dis., **23**, 201 (March), 1939.

JOHN WYETH & BROTHER, INCORPORATED, PHILADELPHIA

BOOK REVIEWS

"The chief glory of every people arises from its authors."—Dr. Samuel Johnson.

"HISTORY OF MEDICINE." (Illustrated). Arturo Castiglioni, translated by E. B. Krumbhaar. Price $8.50. Alfred A. Knopf, New York, 1941.

The general interest of the American medical profession in the history of medicine was first stimulated by such men as Osler and Welch. The monumental work of Garrison, whose volume on medical history had passed through four or five editions by the time of his death a few years ago, contributed to maintaining this interest.

The most recent comprehensive volume on the History of Medicine is the English translation of Dr. Castiglioni's book, first published in Italian in 1927. The author at that time was teaching medical history at the University of Padua. He has long been an internationally known medical historian and in recent years has became better known in this country through his lectures in various medical centers and his present position as teacher of medical history at Yale. The translator, Dr. E. B. Krumbhaar, himself a widely known authority in this field, deserves great credit for the success of the English edition. He has collaborated with the author in rearranging and adding to the material pertaining to more recent years.

The first half of the book deals with our knowledge of prehistoric disease and the evolution of medical practice from primitive times to the Renaissance. The history of civilization, which so closely parallels the evolution of medicine, is interestingly brought out. After discussion of the Renaissance the story unfolds in chronological order. In chapters dealing with each of the last four centuries medical progress is related in all of the specialties of medicine. The section dealing with American medicine has been largely contributed by Dr. Krumbhaar. The appendix, in addition to a valuable bibliography, contains a table illustrating in chronological order the rise of the more outstanding universities and faculties of medicine. The book is set in excellent type and its many illustrations have been unusually well selected and remarkably reproduced.

Although Castiglioni's history is invaluable as a reference, the very fine narrative style makes it fascinating reading, both to physicians and laymen. In his preface to the English edition, the author states: "This work is intended to give a picture of medicine at a time which perhaps marks the close of a historical period. It endeavours to express and teach through the examples of the past that above all troubles, all wars, and all revolutions the precious treasure of humanitarian thought and of medicine as a science, as an art, and as an impetus to the will to live will not stop in its progress toward further conquests."—B. F. K.

SYNOPSIS OF OBSTETRICS By Jennings C. Litzenberg.

This little book of 376 pages and 157 illustrations is small enough to fit into a coat pocket.

By one of the master teachers of Obstetrics in America, it has performed excellently the task of digesting the important principles and "sign-posts" of obstetrical care. It is in no sense a textbook, and makes no effort to be original, but serves to condense and digest the accepted facts of obstetrical principles.

Since the author has made no effort to be original, he has freely borrowed the illustrations from other complete obstetrical textbooks and has selected from many the best and clearest. The chapter on "Placentation" and the chapter on "The Physiology of Pregnancy" are each worth the price of the book. This work should be invaluable to the physician who desires a quick and thorough review, especially one which points toward State Board examinations.

The book is highly recommended.—E. N. S.

"SYNOPSIS OF VARICOSE VEINS." Alton Ochsner, B.A., M.D., D.Sc. (Hon.), F.A.C.S. and Howard Mahorner, B.A., M.D., M.S., (Surgery), F.A.C.S. 50 Illustrations, 2 Color Plates, 147 Pages. C. V. Mosby Company.

This monograph is a concise discussion of the treatment of varicose veins with a brief historical introduction. The authors discuss the anatomy of the leg from the viewpoint of the subject involved; and consider the pathology found in varicose veins, along with a brief discussion of the physiology of the veins of the leg.

They quote from numerous sources showing that the fairly recent treatment of this condition by the injection method alone has been fraught with disappointment.

The methods of examination of the patient with varicose veins are clarified. There is a discussion of the authors' conception of the best type of treatment for these patients. They go into the combined ligation and injection method as the method of choice in most cases at this time. Brief mention is made of other and more rarely used methods of treatment.

The authors are conservative and open minded; and make clear that the treatment of this condition, which has made great progress in the last few years, is still improving.

The book is an excellent monograph on this subject and is deserving of a place in the library of any physician who has occasion to see this type of patient.—J.P.W.

All Physicians May Exhibit New Film On Health of School Child

Under the rules laid down by the American Academy of Pediatrics, their new educational-to-the-public-film, "When Bobby Goes To School," may be exhibited to the public by any licensed physician in the United States.

All that is required is that he obtain the endorsement by any officer of his county medical society. Endorsement blanks for this purpose may be obtained on application to the distributor, Mead Johnson & Company, Evansville, Indiana.

Such endorsement, however, is not required for showings by licensed physicians to medical groups for the purpose of familiarizing them with the message of the film.

"When Bobby Goes to School" is a 16-mm. sound film, free from advertising, dealing with the health appraisal of the school child, and may be borrowed without charge or obligation on application to the distributor, Mead Johnson & Company, Evansville, Indiana.

Holland-Rantos Appointed Distributor For Rantex

The Holland-Rantos Company have been appointed exclusive distributors for Rantex, the newest development for surgical masks and caps — a patented fibre product which is insoluble in live steam, boiling water or common solvents. A magnification of Rantex shows that it is 176 times more protective than a single layer of gauze. As a result, it provides masks and caps which are exceptionally cool, comfortable, light and free from irritating lint or yarn. They are inexpensive enough to be discarded after a single use; yet they can be autoclaved or sterilized.

The masks are shaped to fit the face; the caps are well tailored. The masks and caps are already being used in many hospitals — including Doctors Hospital in New York, University of Pennsylvania Graduate Hospital in Philadelphia, United States Marine Hospital in Boston, Wisconsin General Hospital, University of Wisconsin in Madison, Wis., and the East Oakland Hospital in Oakland, Calif.

REVIEWS and CORRESPONDENCE

SURGERY AND GYNECOLOGY

Abstracts, Reviews and Comments From
LeRoy Long Clinic
714 Medical Arts Building, Oklahoma City

"THE MANAGEMENT OF THE JAUNDICED PATIENT WITH SPECIAL REFERENCE TO VITAMIN K." Frederick A. Coller, M.D., F.A.C.S., and J. Matthews Farris, M.D., Ann Arbor, Michigan. Surgery, Gynecology and Obstetrics, July 1941, Volume 73, Number 1, Page 21.

"The mortality accompanying operations on jaundiced patients may be materially reduced by careful attention to the details of preoperative and postoperative care. The incoagubility of the blood frequently observed in this group of patients is due to a prothrombin deficit. Prothrombin is one of the serum proteins and like other serum proteins is supplied by the liver. A prothrombin test, therefore, is simply a test of liver function and parallels other tests as an index of liver dysfunction. Avitaminosis K is not so much a deficiency disease as it is a condition due to faulty absorption and is responsible for a demonstrable fall in the blood prothrombin which is manifest clinically in a tendency to bleed. The most common cause of hypoprothrombinemin is the absence of bile in the intestine, a condition common in the various forms of obstructive jaundice and other related conditions. Repeated administration of intravenous fluids in the presence of hemorrhage and the continued aspiration of bile from the gastrointestinal tract by the Wangensteen suction apparatus are conditions where a test of the prothrombin clotting activity should be done. The usual bleeding tests of Duke and Ivy are not dependable in detecting this deficiency, while the bedside test of Smith has proved to be highly satisfactory for clinical purposes. The fact that prothrombin level of the blood may be reduced to hemorrhagic levels by the administration of hepatoxic substances makes it apparent that the liver plays an important role in the metabolism of prothrombin. Clinically, it would appear that the ability to synthesize prothrombin may be retained in a certain number of cases even in the presence of extensive cirrhosis and of metastatic carcinoma of the liver.

Therefore, as in the past, the prime objective in the treatment of obstructive jaundice is the restoration of the patency of the biliary ducts and the protection of the hepatic parenchyma. To attain this latter objective, a high protein and high carbohydrate diet should be given. Attention to other vitamin needs will enhance the state of general nutrition, cardiac reserve—vitamin B—resistance to infection—vitamins A and D—and the healing of the wound—vitamin C. Difficult surgical procedures can be successfully accomplished only if bleeding is well controlled. A new light thus shed on an enigma of the past gives hope of materially reducing the risk of surgical operations which are performed upon jaundiced patients."—LeRoy D. Long.

"A CRITIQUE OF THE SURGICAL TREATMENT OF HYPERTENSION." Edgar A. Kahn, M.D., Ann Arbor, Michigan. Annals of Surgery, June 1941, No. 6, Page 1073.

At the University Hospital in Ann Arbor, Michigan, about 700 patients in the past seven years have been subjected to bilateral supradiaphragmatic splanchnic section.

Three hundred fifty cases operated upon by Doctor Peet have been studied in detail preoperatively and postoperatively by various departments of that hospital.

At the Mayo Clinic, Adson and Craig have employed a subdiaphragmatic operation, with no postoperative deaths in 271 consecutive cases. Their results compare favorably with those at the Universtiy of Michigan except they have not had as good results in malignant hypertension. Doctor Kahn believes this may be due to the fact that their operation is partially a postganglionic procedure.

Another large series of cases has been operated upon by Doctors White and Smithwick who have criticized previous operations on the basis that they are either incomplete or do not guarantee against nerve regeneration. These men are now carrying out an extensive supra- and trans-diaphragmatic procedure. They have had some excellent results.

The most important fact is that here are three large series of operative cases which are being carefully studied by skeptical but competent non-surgical observers.

It is the author's opinion that surgery has more to offer real hypertensives than any other form of treatment generally available at this particular time.

He cites instances of criticism of the surgical treatment of hypertension. Individual cases have been quoted of people who live for years without symptoms from their high blood pressure, but the author thinks these are exceptions because hypertension kills more people than cancer. This is especially true in men.

Numerous cases have been reported in which there has been a drop in blood pressure following some nonspecific operation. Removal of prostate or prostatic resection often causes a drop in blood pressure. It has been known for a long time that catheter drainage alone can reduce the elevated blood pressure to normal. Prostatectomy in this instance might be considered a specific operation rather than a non-specific operation.

Occasionally thyroidectomy will produce a drop to normal in the blood pressure.

The author believes that many cases followed by unfavorable results did not have true essential hypertension. Many cases reported do not mention hemorrhages, exudates and papilledema disappearing from eyegrounds, where heart size and kidney function have returned to normal.

In particular the author criticizes a report by Rytand and Holman who are unenthusiastic about supradiaphragmatic splanchnic section, after performing it upon 40 patients, in more than half of whom the blood urea and, therefore, the nonprotein nitrogen of the blood was elevated. Reports by Peet of the University of Michigan have repeatedly and specifically stated that when the nonprotein nitrogen of the blood is elevated, operation is contraindicated.

Kahn thinks that the most valid criticism of the surgical treatment of hypertension is that only slightly more than 40 percent of people operated upon show a significant drop in pressure at the time of examination from nine months to seven years postoperatively, and that cases which will respond to splanchnic section cannot be selected in advance. In this regard he feels that progress is being made in the attempt to rule out those not vasospastic but primarilly arteriosclerotic and those with fixed vascular changes, as candidates for splanchnic section. In the last few years routine pyelography has prevented certain hypertensives with unilateral or bilateral kidney disease from undergoing this operation. —LeRoy D. Long.

"SULFONAMIDE SUPPOSITORY IN THE TREATMENT OF ACUTE GONORRHEA IN WOMEN." Dr. William Bickers, M.D., Richmond, Va. American Journal of Obstetrics and Gynecology, July 1941, Vol. 42, No. 1, Page 162.

The author calls attention to the fact that oral administration of sulfonamide for the treatment of acute gonorrhea in women has not been satisfactory, certainly not nearly as satisfactory as in the treatment of the same condition in men where he feels the better results may be due to the chemotherapeutic effect of the drug passing over the male urethra after being excreted from the kidney.

In his out-patient service the author treated 25 cases of acute gonorrhea in women with oral administration of sulfonamide, employing 80 grains daily for the first three days and 60 gains thereafter for two weeks. In this group, only one patient had a negative smear at the end of one week and three patients had negative smears at the end of two weeks. The other 21 patients had clinical and laboratory evidence of gonorrhea when the 17 day course of therapy was completed. Of the 18 patients in the series of 25 who could be followed for three months, three developed a Bartholin abscess, four developed evidence of salpingitis, and 16 had a persistent endocervicitis while six had subacute Skenitis. It was upon the basis of this series, in addition to two children who had an acute gonorrheal vaginitis and received no relief from oral administration of sulfonamide, that the author bases his reflection that oral administration of the drug is not satisfactory in the treatment of acute gonorrhea in women.

Another series of 25 patients was treated by sulfonamide suppositories, employing 20 gains of sulfonamide and 10 grains of lactose in the suppository and using three suppositories daily.

The patients were treated for an equal length of time. Smears from the urethra and cervix were negative in all 25 patients at the end of one week. Of the 21 patients followed for a period of three months, 19 were symptom-free without evidence of urethritis and there were no cases of bartholinitis. There were no instances of salpingitis. One patient had a reinfection from a known source and one patient had a slight residual endocervicitis.

Two cases of acute vaginitis in children were seen and treated with laboratory and clinical cure in a 17 day treatment period.

It is the author's conclusion that sulfonamide locally in the form of boroglyceride suppository probably has real value in the prevention of complications and cure of infection in women. He feels that sulfonamide is absorbed from the vaginal mucosa in varying degrees, the degree of absorption being more evident in patients with acute vaginitis.

COMMENT: This is an extremely interesting and practical work in clinical investigation because it is entirely correct that the oral administration of sulfonamide has not been as satisfactory in treatment of acute gonorrhea in women as has been reported in men.

The results here recorded graphically demonstrate the ineffectiveness of the oral administration and, conversely, render excellent evidence that administration by suppository gives splendid results.

That the vagina has powers of absorption and that, frequently, treatment by the vaginal route is more effective has been demonstrated in the more effective treatment of gonorrheal vaginitis in children by suppositories than by either parenteral or oral administration of estrogens.

The author's contention that there was practically no residual endocervicitis is an additional important advantage.—Wendell Long.

"A STUDY OF ONE HUNDRED AND FIFTY CONSECUTIVE CASES OF ECTOPIC PREGNANGY." H. Hudnall Ware, Jr., M.D., and W. C. Winn, M.D., Richmond, Va. American Journal of Obstetrics and Gynecology, July 1941, Vol. 42, No. 1, Page 33.

These authors have carefully reviewed their material and the summary and conclusions are quoted below.

"1. One hundred and fifty case of ectopic pregnancy have been reported, with a mortality rate of 8 percent. This could be reduced to an operative mortality of 5.41 percent by eliminating four patients who died before operation.

2. A complete and accurate history is most valuable in arriving at a correct and early diagnosis. The menstrual history is particularly important, and often the patient states that her last period was delayed, scant, prolonged, or abnormal. Careful inquiry will reveal a period of amenorrhea, that is, a cycle of more than 28 days before the vaginal bleeding was noticed.

3. A dull ache or cramplike low abdominal or pelvic pain was recorded in 82 percent of the patients.

4. A typical history with sudden pain, syncope, and shock was obtained from only 26 of the patients, 17 percent.

5. Thirty-one patients, 20.66 percent, had been sterile five years or more.

6. Thirty-nine patients, 26 percent, gave a history of one or more abortions.

7. The temperature usually shows slight elevation, rarely above 100 degrees F. It was below 99 degrees F. in 39, or 26 percent, and below 100 degrees F. in 83, or 71 percent, of the patients.

8. A decrease in hemoglobin and red blood cell count, associated with recurring pelvic pain and temporary leucocytosis was frequently observed. The leucocyte count was below 10,000 in 54, or 36 percent, and above 15,000 in only 25 percent of the patients.

9. The sedimentation rate was of value when pelvic inflammatory disease was suspected. A rapid rate is seldom seen unless infection is present. Massive hemorrhage may occasionally increase the rate.

10. Manipulation of the cervix usually causes excruciating pain in the presence of ectopic gestation.

11. Posterior colpotomy is seldom necessary.

12. Pelvic examination must be gentle.

13. Fifty percent of the deaths could probably have been prevented if the women had consulted a physician and entered the hospital at the onset of symptoms.

14. Immediate operation, transfusion with whole blood, and other supportive measures, give the best results."

COMMENT: Ruptured ectopic pregnancy is a relatively frequent disease. However, there are many variations in the location of the rupture and the consequent amount of bleeding which produces a wide variety of symptomatology and makes accurate diagnosis frequently difficult. For the same reason, many instances of ruptured ectopic pregnancy are drastic emergencies while many others with only a small amount of bleeding intraperitoneally are not alarming emergencies but difficult diagnostic problems.

It is because of the relative frequency of this disease and the wide variety of symptomatology that reports such as this one are valuable.

There is no difference of opinion about the treatment when the diagnosis is once established. All agree that immediate operation with supporting transfusions if necessary is the wisest course.

The foundation stone of diagnosis has always rested principally on history of vaginal bleeding and the character of the pain. However, in order to maintain a high degree of accuracy, there are many secondary considerations which must be brought to bear, including laboratory investigation.

The mortality rate in this particulay series is quite high but can probably be explained by the severe character of some of the ruptures encountered in this group of patients.—Wendell Long.

"OBSERVATIONS ON THE USE OF PROLONGED ANESTHETIC AGENTS IN UPPER ABDOMINAL INCISION." Robert Zollinger, M.D., Boston, Mass. Surgery, July 1941, Vol. 10, No. 1, Page 27.

It is generally believed that the limitation of respiratory excursions due to pain is an important factor in

the relatively high incidence of pulmonary complications following operations on the upper abdomen. It has been shown that stimulation of the central end of any intercostal nerve causes reflex inhibition of respiration. This is particularly true of the seventh to twelfth intercostal nerves. Also, stimulation of the peripheral branches, including those to the rectus abdominus muscle, inhibits respiration. It has been shown repeatedly that the inhibition to respiration is greater than is generally recognized, often amounting to approximately 60 percent depression of the mean vital capacity during the first few days following operation.

Present prophylactic measures, such as avoidance of tight dressings, rebreathing with carbon dioxide, and frequent changes of position, employed to prevent or decrease the incidence of pulmonary complications, are only moderately effective. Usually the patient is either unable or unwilling to take a deep breath, to cough, or to move about in bed because of the pain arising from the surgical incision. To the authors, it seemed reasonable that if the pain in the wound were alleviated sufficiently during the first few postoperative days, the patient would be more comfortable and the surgeon would have fewer pulmonary complications to contend with.

A number of methods have been advocated to minimize the pain of surgical incisions. Numerous surgeons advocate placing the incision in such a fashion as to interfere with as few sensory nerves as possible. Transverse incisions, for example, have become more frequent for this reason.

The authors approached the problem in a different manner, various types of anesthetic agents being used locally about the wound in an effort to block intercostal nerves.

They finally adopted a solution of eucupin in oil for blocking of the intercostal nerves at about the midaxillary line on one or both sides.

Since it is difficult to estimate the amount of pain any individual has, they resorted to comparison of the vital capacities before and after operation in patients who had such intercostal nerve block as compared to those who did not have intercostal nerve block.

The block of the sixth to the eleventh intercostal nerves with eucupin solution in oil was found to decrease the post-operative pain of upper abdominal incisions, as demonstrated by vital capacity measurements.

Their experiments and their number of cases are limited but they are under the impression that intercostal nerve block with eucupin solution in oil will decrease the incidence of post-operative pulmonary complications. Their procedure does seem to have merit and warrants further investigation and clinical trial.—LeRoy D. Long.

EYE, EAR, NOSE AND THROAT

Edited by Marvin D. Henley, M. D.
911 Medical Arts Building, Tulsa

"PROBLEM OF WAR HEMERALOPIA." E. Heinsius, Kiel, Germany. Medizinische Welt. 1941, vol. 15, No. 14, p. 341-347.

As it happened during the first World War there is again an increase in the number of cases of nightblindness. It has been called "war hemeralopia" though it is only indirectly caused by the war, being the result of deficiency of vitamin A. Its importance in military service is evident.

The individual complaints vary. Recruits may say that they do not recognize their officers; or, that they are uncomfortable at night watches, cannot keep on with the others at night marches, or cannot drive the supply car at night. Officers may not recognize enemy patrols, or may mistake their own soldiers for the enemy.

The universal routine blackout of cities and the routine night attacks of the armies revealed the high incidence of night blindness among both soldiers and civilians. It is natural that severe degrees of hemeralopia will make people more or less unfit for military service.

Nightblindness is a disorder of the adaptability of the eye to reduced illumination or to darkness. There are (a) constitutional, and (b) acquired cases of hemeralopia.

The constitutional type of nightblindness appears as 1. a hereditary disorder with either the dominant or the recessive form of inheritance, 2. associated with myopia, or 3. gradually developing with advancing age.

The acquired or secondary hemeralopia may be due to one of the following causes: 1. deficiency of vitamin A; 2. optical dysfunction of the eye (opacities of the refracting media, miosis); 3. diseases of the retina or choroid; 4. neural diseases, and 5. poisons.

Hereditary hemeralopia is the most frequent type to be seen; it makes about 50 percent to 85 percent of all cases of nightblindness. The hereditary form may be dominant (NOUGARET's type) as it occurred in the descendants of a 17th century Frenchman called Nougaret. This family has now ten generations with 2,116 members, of whom 135 are or were nightblind. Similar nightblind families have been observed in Denmark. The recessive form of hereditary hemeralopia is always associated with myopia of from 6D to 11 D, also frequently with astigmatism and loss of visual acuity. Such a family has been described by DONERS (1854). The third hereditary form is simple recessive, and has been first described by NETTLESHIP in 1908. This is also mostly associated with a slight degree of myopia, and occurs in persons descending from consangineous marriages. A fourth hereditary type of hemeralopia is seen in the Oguchi disease in which the affection is combined with a whitish-gray discoloration of the fundus; after several hours of exposure in the dark the fundus turns to normal color again (Miguo's phenomenon).

Besides the hereditary hemeralopia it has been found that any myopia may be connected with a more or less disorder of dark adaptation of the retina. "Senile" hemeralopia was first recognized by TSCHERMAK, and later investigators proved that the power of dark adaptation decreases at the beginning of the fourth decade of life. PILLAT thinks that even such physiological hemeralopia is due to trophical disorders of the retina, and should be included under the general term of vitamin-A deficiencies.

Difficulty in seeing in the dark caused by dietary deficiencies has been known for several thousand years, but not until BITOT (1863) was it studied systematically, and not until STEPP and his discovery of vitamin A in 1909 was the true cause of the deficiency and of nutritional hemeralopia known. Such a deficiency may result from 1. lack of supply, 2. increased vitamin requirements as in pregnancy, rapid growth, febrile diseases, or active metabolism, 3. disorder of the absorption of vitamin and provitamin from the bowels as in chronic gastrointestinal diseases, catarrhal or obstructive jaundice, postoperative vomiting, adminstration of paraffin oil, 4. disorder of the metabolic regulation in the liver as in liver cirrhosis.

The visual purple is composed of protein and a vitaman-A-like substance called retinin. Light will change the visual purple into yellow pigment, and the regeneration of the purple requires fresh vitamin A and protein.

In Germany, dietary deficiencies occur chiefly among the civilians, and the author could not find any true case of war hemeralopia among German sailors, though about 21 per cent of the adaptometer readings were subnormal. Yet, such subnormal values are not necessarily a proof of vitamin deficiency. Many other factors such as the general health, psychic influences and alcoholic beverages, may influence the momentary values of reading.

Indeed, hemeralopia is not infrequent in psychoneurotic persons, in those affected by war anxiety neurosis, or those who suffer from thyrotoxicosis. It seems to be unjustified to call the nightblindness a "war hemeralopia," and to blame the war for everything.

"GUNSHOT INJURIES OF THE ESOPHAGUS." W. Hetzar. Konigsberg. Zentralblatt fur Chirurgie. April 1941. vol. 68. No. 16. page 763-768.

Among the war injuries of the trunk the most undesirable next to the abdominal injuries are the lesions of the thorax complicated by mediastinal affection. The majority of such injuries rapidly end in death because the mediastinum houses a number of important organs, and because, if there is not an early death, the wound will almost certainly suppurate, and cause general sepsis. Surgical approach to the mediastinal organs is still very difficult.

Since the mediastinum is closely packed with many anatomical structures, it is extremely rare that one of these structures is injured in an isolation form, without lesion of the neighboring structures. Thus, isolated gunshot wounds of the esophagus are also extremely rare. Yet, if they occur, they have a good prognosis, in spite of the mediastinitis which develops secondarily. It may sometimes happen that the projectile does not leave the thorax, but it remains in the mediastinum where it is soon covered with fibrotic tissue. As the Polish-German campaign showed, primary infections of the mediastinum were mostly seen after perforating cross-shots of the thorax.

Injuries of the cervical esophagus are a priori of better prognosis, since they are easily approached externally, and a beginning infection can be quickly prevented from reaching the mediastinum.

Generally, the patient does not feel much after his esophagus has been shot. There are very few localizing symptoms, and the diagnosis may be only occasional. There is little or no dysphagia, especially if the lower third of the gullet has been injured. Since the modern projectiles are of small caliber, even the expected fistula symptom (flow of food from esophagus) will be missed. Yet, considering this symptomless character of esophagael gunshot wounds, one should always be suspicious in a case of benign mediastinal injuries, and one should treat the case as if the esophagus had been shot. This means that every precaution should be taken for the prevention of suppurative mediastinitis. Gastrostomy is needed, and the oral feeding of the patient should be replaced by artificial feeding through the stomach wound.

With such a precaution the esophageal wound will heal promptly. Late sequela of the injury may develop, however, in the form of cicatrical displacements of the esophageal tube causing slight dysphagia; even stenosis or traction and pulsion diverticula may result. Sometimes, the esophageal injury might be entirely symptomless, and a later examination may not find any trace of a former lesion. Such was almost the case of a 44-year old German soldier, who was shot during the Polish-German campaign. The projectile stuck in the mediastinum, as this has been proved by roentgenograms. It caused bronchitis, and hemoptysis. Half a year later, another roentgenogram showed the disappearance of the projectile. On its place there was a single fibrosis of the middle third of the esophagus. It is supposed that the projectile migrated into the esophagus and left the body per vias naturales.

"THE INTERIOR OF THE LIVING EYE CONSIDERED AS A BIOCHEMICAL LABORATORY." A. M. Ramsay. Glasgow. Glasgow Medical Journal. June 1941. vol. 17. No. 6. p. 173-188.

Before the discovery of the ophthalmoscope no one knew anything about the interior of the living eye. All our ophthalmology was based on clinical case reports and the patient's own statements. The ophthalmologist had to be guided in his treatment by the subjective symptoms, but there were no "objective signs" to rely upon. Thus, the pre-ophthalmoscopic era abounds in such unspecified terms as amblyopia, amaurosis, etc. Yet, there was no further possibility to classify blindness.

HELMHOLTZ, in 1851, completed the invention of his ophthalmoscope as the result of a skilled and deliberate research. Albhecht von GRAEFE was a young physician at that time, but he immediately recognized the great opportunities and the clinical value of the new instrument. He indeed considered Helmholtz's ophthalmoscope equivalent with the discovery of a new World. It was GRAEFE who developed ophthalmoscopy to a perfect diagnostic method, yet it is the merit of his contemporary, HUGHLIN JACKSON, that the method and the examination of the eye fundus has been universally accepted as a routine part of the clinical examination.

The ophthalmoscope is, however, much more than a diagnostic and prognostic instrument of ocular, cerebral and systemic diseases. The interior of the eye offers a unique opportunity for the observation of vital processes in health and disease. Indeed, the fundus oculi is a laboratory in whch Nature herself performs all the experiments. With the aid of the ophthalmoscope we can look through the window of the pupil into this laboratory and watch Nature at work. The insight into this laboratory opens a new way for studying disease and its physiopathology. What we can see in the laboratory of the eye is an indicator of what is occurring hidden from view in other parts of the body, in the kidney, the cardiovascular system, the brain, etc. The routine use of the ophthalmoscope enables us in many instances to detect the earliest manifestations of remote and incipient diseases.

Each of the three tunics of the eyeball contribute something to the make-up of the ophthalmoscopic picture: the sclera is the white canvas on which the picture is painted; the choroid, with its pigment and blood vessels, gives the red color, while the transparent retina gives the peculiar lustre of the picture. Normally, the transparency is due to the impermeability of the intraocular capillaries to the passage of colloids. Yet, if metabolic waste products reach the capillary circulation, the fine vessels dilate, their walls become permeable, and the infiltration of colloid causes a lack of translucency of the ophthalmoscopic picture. The patient begins to complain in general terms of headache, and, in his urine, the normal ratio between the daily output of urine and its specific gravity may be found disturbed. At such an early stage of disease, everything can be corrected easily by rectifying renal inadequacy, and functional derangement of the liver.

After some time, if the condition of toxemia is not corrected, the loss of retinal transparency becomes more apparent, and the intraocular capillaries will be further injuried so that small, irregular hemorrhages appear on the fundus oculi. Soon, there will be a frank acute retinitis, which begins together with the acute glomerulonephritis. Looking into the eye through the ophthalmoscope is almost the same now as watching the renal glomeruli: observation of the intraocular vascular changes is a reliable guide in prognosis.

And it is exactly the same with many other systemic conditions. In many of them there are vascular changes in the eye fundus which can be readily seen. The value of these changes in prognosis cannot be properly estimated until they are correlated with such symptoms as high blood pressure, albuminuria, glycosuria, uremia, anemia, etc.

The debt which general medicine owes to ophthalmoscopy cannot be fully acknowledged until the physician examines the eye as systematically as he feels the pulse, interrogates the heart, and applies chemical and microscopic tests to the urine.

"SENILE DEAFNESS." By G. Hofer. Graz. Austria. Medizinische Klinik. 1941. vol. 37. No. 3. page 49-52.

It is generally known that the function of hearing changes with advancing age. The first sign of the decreasing hearing power is that the sound of fine instruments such as a watch cannot be heard, or the high tones played by an orchestra are not perceived, or that the ageing person has difficulties in an ordinary conversation in a large group. In the advanced stages of senile

deafness, tinnitus is associated with the hearing difficulty.

Senile deafness and its pathogenesis has been studied since the end of the 19th century. It was ZWAARDEMAKER who made the first serial investigations on the basis of which he formulated the three laws of presbyacusis: (1) the human hearing gradually loses its acuity, and at the onset of senium it has already lost half an octave of its upper tonal limit; (2) during the senium the loss of upper tones further increases; and (3) the upper tonal limit is e7 in adolescence, while in old people it is a6 or even g6. Any further reduction of the upper range or hearing should be considered pathological. In other words, each age has its own characteristic upper limit of audition.

Simultaneously with Zwaardmaker, CUPERUS studied the lower range of hearing, and found that in senile deafness there is a loss also at the lower tonal range. Later, RICHTER showed that with advancing age there is a general change in the threshold of hearing by both air and bone conduction. SPORLEDER's investigations proved that progressive diminution of hearing is universal after the age of fifty. Moderate grades of hypoacusis occur among middle-aged persons between 50 and 70 years of age. After 70, the loss of auditory faculties becomes rather rapid.

The cause of senile hearing loss has been sought after already by SPORLEDER, but he could not find any pathological alteration in the inner ear, and suggested that the cause may be centralwards in the acoustic nerve. Thereafter, WITTMAACK (1907)made his histological studies of senile degenerative deafness on dogs, and ZIFFER described the age-produced changes in the hearing organ. According to JAEHNE, the anatomical findings in senile deafness were as follows:

(1) atrophy of the organ of Corti, with almost complete disappearance of the membrana tectoria, changes in the diameter of the cochlear duct due to alterations in Reissner's membrane, changes in the ligament and the stria vascularis, fibrosis, and ossification in the perilymphatic spaces; (2) atrophy of the cells of the spiral ganglion, fibrosis in Rosenthal's neural canal; (3) atrophy of the fine neural fibrilles; (4) atrophy or chronic inflammation with fibrosis in the acoustic nerve.

O. MAYER's investigations, however, showed that there are several other possible causes of senile deafness such as changes in the membrana basilaris, labyrinthine and neural degenerations due to arteriosclerosis. He also pointed out that not every case of deafness in old age is necessarily a case of senile deafness: it may be a progressive labyrinthine deafness or deafness caused by osteofibromatosis of the labyrinthine capsule.

Lately, two Finnish authors, FIEANDT and SAXEN, made a thorough study of the anatomical changes in senile deafness. They proved that the richly vascularized epithelium of the stria vascularis in the cochlear duct is of great importance for the formation of the endolymph. The epithelium of the stria and that covering the convexity of the spiral prominence are true secretory organs of the labyrinthine fluid. The vessels of these secretory organs are affected by senile arteriosclerosis, and the result will be an atrophy of the organ of Corti. According to these authors the pathological basis of senile deafness is (1) atrophy of the organ of Corti due to vascular causes, or (2) primary atrophy of the spiral ganglion, and, rarely, (3) central changes in the acoustic tract.

Vascular senile deafness is associated with a relatively good bone conduction, while in the deafness due to primary ganglionar atrophy the bone conduction is shortened, and the upper threshold of the hearing is lowered. In senile deafness due to central causes the lower threshold of hearing is elevated, but in all types the vestibular reactions are normal. Any change in the vestibular tests must be caused by some central affection.

All these investigations prove that senile deafness is the result of different factors, and many more studies will be needed to expose all the possible combinations of these factors. Thus, we are still ignorant of the senile changes in the central nervous system. The prognosis is uncertain. There may be even hereditary predispositions at work so that no one can foretell the exact outcome of a case of senile deafness neither by judging from the onset of the affection, nor by making forecasts from the speed of the advancing deafness.

Considering the pathology of senile deafness, it seems to be futile to attempt at any kind of treatment. Treatment of the existing affections of the middle ear is indeed not a cure for presbyacusis. For some time, KOCH and others experimented with male and female estrogenous substances on the belief that the senile alterations are partly due to the lack of these hormones. These experiments proved satisfactory inasmuch as the estrogenous substances injected intramuscularly caused the disappearance of the subjective sensation of tinnitus in 95 percent of the cases. Moreover, some patients reported a certain improvement in hearing, and it could be proved that the upper limit of hearing was increased by one tone. Such improvements would last for one and a half to two years. Three injections of the estrogens were sufficient to stop any recurring tinnitus.

The mechanism of action of these substances is still unknown, and it has to be shown whether the humoral and vegetative changes in senile deafness are reversible, and whether they could be influenced by the sex hormones.

PLASTIC SURGERY

Edited by George H. Kimball, M. D., F. A. C. S.
912 Medical Arts Building, Oklahoma City

"THE SPLIT VERMILION BORDERED LIP FLAP." Bradford Cannon, M.D., Boston, Massachusetts. S.G. & O., July 7, 1941, Page 95.

The author recommends this operation for tight upper lips following repair of double hare-lip. He borrows the flap from the lower lip. This operation is a modification of the Estlander plan originating in 1872. The author recommends general anaesthesia, careful marking of the flap and the lips to insure balance of the parts. One particular point in the technique is the release of the short columella and the elevation of the tip of the nose. The wound in the lower lip must be closed carefully to insure satisfactory healing.

The author recommends two and one-half to three weeks time before severing of the pedicle. The circulation of the flap can be tested by digital compression.

The author illustrates the procedure by carefully prepared diagrams. He shows the pre-operative and post-operative results by photograph.

Conclusions: This article demonstrates the use of the flap from the lower lip to the upper lip where there is need for tissue. This is planned similiar to the Estland or Abbe operations. A similar procedure is often used for partial loss of either upper or lower lip. This may be due, of course, to operations, radiation for tumor, trauma, etc.

It should be stressed that such an operation when done should be done very carefully and accurately with especially careful closure of all suture lines.

"MALIGNANT MELANOMAS." J. B. Brown and L. T. Byars. Am. J. Orthodont. & Oral Surg., 1941, 27:90.

The authors re-emphasize the rapidly fatal character of malignant melanoma, the uncertainty of its origin and the diversity of its occurrence. Because of certain confusion regarding treatment they present some guiding principles of such treatment. Since a large percentage of such malignancies arise in pigmented nevi, destruction of the pre-cancerous lesion should be the goal. They recognize two types of nevi, (1) the congenital or Neuronevus which is flat and not heavily pigmented and seldom becomes malignant, and (2) the nevus that develops any time during life, increases in size, and

often becomes malignant. They state that any pigmented or non-pigmented moles subjected to chronic irritation, or showing evidence of growth, increase in vascularity, change of color, repeated infection, or of ulceration, and all smooth, coal-black nevi should be removed. The dangers of "fooling" with the common mole, with acids or incomplete electrodesiccation are stressed. The removal should be quick, painless, non-irritating, thorough, and with minimum handling of the growth. A method which fulfills these requirements is described by the authors (Fig. 1).

The diagnosis of the change from an innocent pigmented nevus to a malignancy is made on the basis of an increase in elevation of surface area, a deepening of pigmentation, and increase in vascularity, or an apparent chronic infection. An entirely new warty growth in the skin or under the nail may be difficult to diagnose as a melanoma but such neoplasms should be considered malignant. Melanin may or may not be present in these melanomas.

There is general agreement that malignant melanoma is resistant to radiation. The treatment of choice in melanoma of the face and head is surgical, and the operative removal, usually with a cautery or diathermy, must be quick, with a minimum handling of the lesion, and should include a generous margin of surrounding normal skin and subcutaneous tissue down to the fascia. This excision may require later repair with skin grafts or pedicle flaps.

The usual cause of death in cases of malignant melanoma is rapidly occurring metastases rather than extension from the local lesion. Five possible causes exist:

1. There may be recurrence of the initial lesion.
2. Metastasis may occur in the adjacent skin.
3. There may be generalized rapidly fatal skin metastases which possibly have their origin in the pituitary-melanophore relationship.
4. Visceral metastasis may occur in a matter of months or years even with the local lesion cured. The patients with late metastasis seem to have the original lesion in the chorioid of the eye.
5. There may be local lymph-node metastasis. Only in this last group is there hope of cure.

Therefore, if the primary lesion is located so that its lymph drainage is fairly well predictable, a prophylactic dissection should be done.

The authors present 11 advanced cases of malignant melanoma; among them was a case with seven year cure following radical neck dissection for metastatic melanocarcinoma, and a case of primary melanoma of the parotid gland with secondary skin metastasis in which the patient was alive and well four years after radical removal. In a third case, a melanocarcinoma of the cheek with neck metastasis, which necessitated excision and grafting of the initial lesion, radical neck dissection, and subsequent removal of a parotid metastasis, the patient was alive after fifteen months.

Conclusions: This article was transcribed from Bradford Cannons translation. All practitioners see melanomas and fear of any procedure about these tumors is well founded. The treatment outlined seems to have considerable merit.

CARDIOLOGY

Edited by F. Redding Hood, M. D.
1200 North Walker, Oklahoma City

"LEFT VENTRICULAR HEART FAILURE." George Herrmann, M.D., Galveston, Texas. Modern Concepts of Cardiovascular Disease, July 1941.

Left ventricular heart failure is heralded by shortness of breath, as a cardinal symptom. Breathlessness usually appears only after exertion but it may come on at rest, particularly during sleep and may awaken the patient from deep sleep. This significant respiratory distress or dyspnea may be transient, periodic or persistent. Though it may be a symptom of emphysema, anemia, aneurysm or other conditions, dyspnea is most commonly the response to pulmonary engorgment which in turn is the result of congestive left ventricular heart failure. Paroxysmal nocturnal orthopnea often appears as the first indication of left ventricular heart failure. There may be merely an exaggeration of a regularly recurring periodic apnea following a regularly increasing dyspnea of Cheyne-Stokes breathing. Usually it is evidence of even more striking and serious disturbance in the respiratory center.

The failing left heart gives rise to the characteristic symptom in advance of the development of pathognomonic signs. The presence of primary physical conditions, hypertensive arteriolar disease with or without chronic nephritis, aortic valvulitis with regurgitation or stenosis, that are known to put a great load or strain on the left heart, should cause the physician to be on the alert for evidences that suggest the imminence of failure. These conditions may be present for years before the clinical phenomena of left ventricular failure intervene gradually or suddenly. Slight Cheyne-Stokes breathing at nightfall, alteration of the pulse and blood pressure or gallop rhythm over the apex and decreasing vital capacity are premonitory signs. As left ventricular failure evolves, fine, crepitant rales and dullness usually appear first at the right lung base posteriorly. Eventually there is a disappearance of tactile fremitus, muffling of the breath sounds and egophony over a developing hydrothorax.

Failure eventually practically always involves the whole heart muscle mass, but fairly frequently the symptoms and signs of weakness of the left less often of the right ventricle alone are presented. The specific unilateral manifestations may persist for some time but only rarely in absolutely pure form. The delicately balanced circulatory equilibrium that normally exists between the lesser or pulmonary and the greater or general systems must be recognized. A relatively minute lessening of the output per beat from one ventricle results after a few hours in the accumulation of a significant blood volume rise in the system that is normally drained by the ventricle.

Forward heart failure develops at times under less common circumstances, the result of loss of left ventricular propulsive power as after a massive myocardial infarction. This creates a clinical picture of shock or peripheral circulatory collapse. Backward heart failure is the common type and is of a different nature. Much convincing argument has been set forth in support of the theory that the usual type of circulatory failure is due to back pressure of blood in the incompletely drained venous system. This will explain most of the clinical phenomena, the symptoms and the signs. The two types, backward and forward failure, may be combined, as in some cases of hypertensive heart disease with coronary occlusion, with myocardinal infarction and weakness.

Recognition of the mechanism of circulatory failure and of the ventricle that is predominately weakened is requisite to the most rational scientific and logical treatment of a given situation. The characteristic respiratory symptoms of dyspnea, orthopnea, cough, and sometimes frothy expectoration with signs of pulmonary congestion, hypertension and P2 accentuation, warrant the diagnosis of left ventricular weakness, insufficiency or failure.

General non-specific symptoms of a failing circulation, as the sense of exhaustion, indigestion, etc., will not be gone into, nor will the symptoms and signs of the more commonly easily recognized congestive or right heart failure be considered.

The clinical picture in terms of pathological physiology. Sudden air hunger may be precipitately presented without any premonitory symptoms. The patient may be awakened from a deep sleep with a start in a state of nervous excitation. The attack often causes him

to get out of bed and go to a window to "get fresh air." Usually the orthopnea subsided rapidly as the patient get thoroughly awakened. After a variable interval, often short, the patient is able to go back to sleep and may sleep the rest of the night undisturbed.

There is considerable evidence that the sensitivity of the central respiratory center changes, and that showers of nerve impulses from the lung are of most serious moment in the pathological physiology of left ventricular heart failure. The dramatic relief that follows the use of morphine substantiates this. The chronic or acute pulmonary venous stasis distends the lung and pleura which gives rise to stimulation of the respiratory center, the so-called Hering-Breuer reflex. The reflexes carried to the medulla through the vagi, bombard and excite the respiratory center to overactivity.

Great anxiety is the predominant symptom and air hunger seems to make the patient "panicky." The breath seems to go so far and no further. It may be quite short. The respiration is rather shallow and rapid and seemingly ineffectual. Then again there may develop a gasping, sighing, thrashing around, noisiness and restlessness. Shallow, rapid breathing may result from the effect of severe anoxemia on the respiratory center and creates a vicious circle. It dissipates carbon dioxide and reduces tidal air 50 percent, though the ineffectual dead space may be adequately ventilated. The vital capacity is reduced by the encroachment upon the air sacs of pulmonary congestion.

Paroxysmal nocturnal dyspnea attacks are dramatic episodes of acute left ventricular failure. The explanation of this phenomenon upon the basis of pathological physiology is still quite theoretical, but should nevertheless be set forth. There is known to be an accumulation of various acid metabolites in the tissues of the brain stem. Pulmonary congestion leads to the decrease in carbon-dioxide accumulation. Sleep removes the control of the respiratory center from the higher centers and local respiratory center acidosis develops. Carbon-dioxide tension rises and otherwise overactive autonomic stress or vagotonia increases during sleep. The blood pressure and pulse rate usually fall so that the irrigation of the respiratory center as well as the general musculature becomes less adequate. These conditions develop simultaneously to a certain point at which an attack or paroxysm is precipitated, usually during deepest sleep. The systolic and diastolic blood pressure and pulse rate rise sharply as the dyspnea increases.

Acute pulmonary edema of acute left ventricular failure, with the transudation of great supplies of fluid into the bronchioles, sharply reduces the available respiratory surface for gaseous exchange. Increased respiratory distress, cough cyanosis, frothy pink-stained sputum and the crepitant rales of acute pulmonary edema rapidly develop. The patient may drown in his own extruded pulmonary fluid.

Treatment of the Pathologic Physiology. The success of some emergency therapeutic procedures throw some light on the mechanisms at play in acute left ventricular failure. In profuse transudatation tracheal bronchial catheterization with suction may be necessary for removal of the secretions and prevention of fatal anoxic anoxia in the patient. The appearance of cyanosis in such a patient is an indication for prompt administration of oxygen by means of a noronasal mask in as nearly 100 percent atmosphere as possible in order to get arterial blood oxygen saturation by mass action. Congestion of the lungs and pulmonary edema interfere with normal arterial oxygen saturation of the blood.

Increased oxygen tension in the atmosphere supplied raises that in the alveolar air and results in a nearly normal saturation. Under standard conditions, each 100 cc. of blood normally saturated with oxygen carries 18.5 to 20.0 cc. of oxygen. Most of this is in loose combination with hemoglobin and only 0.36 cc. of oxygen saturated blood to 22 or 23 cc. in the hemoglobin while that carried in physical solution in plasma is raised to 2.2 cc. These figures represent the maximum supersaturation.

The purely mechanical factor of engorgement seems to play a role in that trapping venous blood in the periphery by tourniquets on all four extremities usually stops an attack. This maneuver prevents the return of blood to the right side of the heart and consequently limits the output of the right ventricle. This would tend to lower the congestion in the lung. Phlebotomy or venesection acts similarly. The decreased filling of the right heart causes a drop in the right ventricular output and the imbalance between the right and left ventricular outputs disappears and the equilibrium in the two circulatory systems tends to be reestablished. If both ventricular outputs are diminished equally, the circulation is slowed but general congestive heart failure is avoided.

Other Emergency Therapeutic Measures. The absolute specificity of morphine sulphate, (¼ gr. or 15 mg.) subcutaneously, in this condition is the most convincing evidence of central nervous origin of most of the trouble. Anxiety is allayed, excessive reflexes from the lungs are interrupted, the cough stops and sweating and pallor disappear. Cheyne-Stokes' breathing may be precipitated and aggravated. The blood pressures, both systolic and diastolic, drop back to normal. The increased parasympathetic tonus may be relieved by atropine and the cardiac asthma gradually subsides.

Pure or crystalline digitalis glucosides are indicated intravenously as powerful left ventricular heart muscle tonics in all severe attacks of pulmonary edema. Prompt myocardial tonic stimulation is, in my experience, best and most safely accomplished with pure crystalline glucosides, as Digilanid C or Lanatoside C 1½ to 2 mg. I.V., or strophanthin ½ mgm. I.V. It should be remembered that the latter should not be used if the patient has taken digitalis by mouth within two weeks. I have had no serious reactions following any of a considerable number of injections of the newer Digilanid C introduced intravanously in 1½ to 2 mg. doses.

Digitalization with the oral standard powered leaf of digitalis by the rapid or moderately rapid methods of 4½ grains (0.3 G) or 3 grains (0.2G) for three or five doses at six hour intervals usually has a very definite effect in increasing the left ventricular tone and relieving the patient completely of attacks. Immediate support of the left ventricular myocardium by intraveonus preparations of digitalis may, however, be necessary to save the situation.

Aminophyllin, intravenously in a 7½ gr. (0.5 G) dose may theoretically be dangerous during the acute phase because of increasing the blood volume which would thus add sharply to the load of the left ventricle. Practically, however, aminophyllin has been used without being followed by any recognized instances of aggravation. It has always seemed rational to me to administer aminophyllin in 3 grain 0.2 G) doses T.I.D., P.C., for the dilating effects of the drug on the coronary arterial bed. This probable coronary dilating effect is the rational basis for the administration of aminophyllin as a possible method of preventing the onset of attacks of acute left ventricular failure.

Intravenous mercurial diuretics, and particularily combinations of organic mercurials and xanthines such as mercupurin, often are effective in interrupting serious regularly recurring nocturnal paroxysms of pulmonary transudation and edema.

Occasionally adjustments take place in the circulation spontaneously and the imbalance in left and right ventricular outputs is naturally overcome. Sometimes at the height of left ventricular failure with extreme pulmonary engorgement, cyanosis and orthopnea, the "safety valve" or the tricuspid ring may dilate and permit regurgitation. As the right ventricle fails the acute and extreme pulmonary engorgement sometimes seems to be relieved, the forcing of the blood from the right ventricle into the congested lung is decreased, the attacks may thus be suspended even though the circulatory failure is not lessened. This shift seems to relieve the situation. The distress is relieved, the

respiratory function improves, the breathing is easier, the cyanosis diminishes, the vital capacity rises and the lung fields clear. Accompanying these changes there is engorgement behind the right heart, the liver enlarges and may accept and hold a liter and a half of blood, and edema gradually develops. The new problems of general or systematic congestion or right ventricular failure arise for consideration.

ORTHOPAEDIC SURGERY

Edited by Earl D. McBride, M. D., F. A. C. S.
605 N. W. 10th, Oklahoma City

"ROENTGENOLOGISCHE DIAGONSE DER MENISKUSLUXATION IM KNIEGELENK OHNE VERWENDUNG VON KONTRASTMITTELN (Roentgenographic Diagnosis of Meniscal Lesions in the Knee Without the Use of Contrast Solutions)." Trygve Krogdahl. Acta Radiologica.

The author calls attention to the fact that with the extremity straight, abduction of the leg permits roentgenographic visualization of the medial meniscus. The procedure was first described by Nordheim, consists in binding both knees together and forcibly abducting the leg. In this position and with the central ray making an angle of 75 degrees to the horizontal, the roentgenogram readily demonstrates the shadow of the meniscus in those cases in which no fracture is present in the knee joint. The inability to visualize the meniscus under these circumstances is presumed by the author to be indicative of an effusion which may be so small as to be clinically unrecognizable. Normally, the space between the femoral and tibial condyles in this position is approximately two to three millimeters. If the space is large on the roentgenogram, it may be presumed to indicate an injury to the collateral ligaments of the knee joint.

"A CRITICAL APPRAISAL OF THE LEG LENGTHENING OPERATION." American Journal of Surgery. LII. 415. June 1941.

End results of bone-lengthening procedures in 52 cases are studied with particular emphasis on gait and function of the extremity. Forty-one were in the lower leg, of which the cause of shortening was poliomyelitis; two were congenital; and two were due to epiphyseal damage from manipulative treatment of club feet. Nineteen of the patients operated upon since 1939 were considered to have passed the rapid growth of adolescence. Then lengthening was from one and one-half to two and seven-eighths inches, as checked on roentgenograms. Consideration was given to a maintenance of length, secondary development of deformity, changes in muscle power, and gait or function. Maintenance of length was quite uniform and three patients showed more rapid growth than the normal leg; and one failed to maintain the leg equality. Improvement was, of course, noted in postural balance, due to leveling of the pelvis and lessening of scoliosis. Knock-knee and valgus of the foot was increased in eight patients, and some loss of ankle function was noted, also changes in gait from greater strain on the weakened hip abductors. Studies of the gaits of these patients showed that six were improved, nine were not improved, and four were worse, which led to the conclusion that the two elements of shortening and muscle weakness must be carefully evaluated, so as to make a more careful selection of cases.

Patients with weak hip fixators and quadriceps accounted for most of the less satisfactory results. No cases of non-union were found, only one case of bone infection, and only moderate bone displacement in the fragments. Foot displacement occurred in two cases, and foot stabilization was done after the lengthening was complete. Nerve disturbance of a temporary character was seen in two cases.

Contra-indications are old osteomyelitis and epiphyseal injuries where length can not be maintained. In congenital shortening each case must be considered separately. The author does not consider the operation feasible in patients without enough power to walk without a brace. Best results are in poliomyelitis cases with enough power in the gluteus muscles to fix the pelvis against gravity when walking, and sufficient quadriceps power to extend the knee with several pounds' resistance to the ankle. In doubtful cases, the shoe should be built up to equal the proposed lengthening, and the resultant gait observed.

"CRITERIO FUNCTIONAL EN EL EXAMEN PERICIAL DE LOS FRACTURADOS (Functional Criteria in the Critical Examination of Patients with Fractures)." Oscar R. Marottoli Anales de Circugia. VI. 369. 1940.

This article is an excellent discussion of how to grade a patient who has had a fracture, and who is ready to return to work. The author brings out the point that in the evaluation of residual disability in the final results from a fracture, the patient should be looked at from a broad point of view, including his ability both to do the kind of work he had been doing, and to adapt himself to a new type of work. He quotes a legal decision in support of this idea, and stresses the point that what he calls a physiological end result is very much more important than the anatomical result. We are all too prone to look at a roentgenogram and decide how much disability a man has, following a fracture, while in reality the roentgenogram is only a small part of the entire examination. Often those patients with roentgenograms which show quite a marked anatomical abnormality will have an excellent functional result. On the other hand, some patients in whom the roentgenogram reveals little or no anatomical disturbances have a great deal of loss of function in the extremity. This is particularly true of the upper extremities. The author quotes McBride in saying that there are three fundamental factors in the evaluation of the end result; mechanical and physiological alterations, the actual functional loss, and how much the patient can compensate or readjust for the loss. Another important factor which has been pointed out is the possibility of the patient's receiving financial compensation for his injury. The author again stresses the fact that functional efficiency is much more important than the actual anatomical changes and presents several cases of fractures to illustrate his point. The article is a very good treatise on the critical evaluation of the end result in a patient with a fracture.

"EARLY OPERATION (SPINE FUSION) IN UNSTABLE LUMBOSACRAL JOINTS." Gilbert E. Haggart. Journal of the American Medical Association. CXV. 2129. 1940.

The author again calls attention to the almost unlimited possibilities of interpretation of backache, and the lack of agreement among surgeons in regard to the pathogenesis of low-back pain. He groups the cases as follows: Group I, older persons who have received conservative treatment over a period of years; Group II, younger patients treated by arthrodesing operations. No case was included which suggested the diagnosis of ruptured intervertebral disc.

The author discusses the subject of congenital anomalies of the low back, and states his adherence to the belief that such anomalies do produce symptoms through faulty mechanics or when the ligaments and muscles become "decompensated." He lists the mechanical faults as unstable lumbosacral facets, bone defects in the posterior elements of the lumbosacral vertebrae, transitional vertebrae, spondylolisthesis, abnormally acute lumbrosacral angle and posterior displacement of the fifth vertebra on the sacrum, and narrowing of the lumbosacral disc.

He concludes that most patients who do not respond to conservative treatment should be fused. In retrospect, he concludes (1) that patients receiving compensation should not be fused until after a settlement has been made; (2) that no emotionally unstable or psychiatric patients should be fused; and (3) that elderly patients should not be fused.—EARL D. McBRIDE.

INTERNAL MEDICINE

Edited by Hugh Jeter, M. D., F. A. C. P., A. S. C. P.
1200 North Walker, Oklahoma City

"THE CONFUSING MULTIPLICITY OF SEROLOGIC TESTS FOR SYPHILIS." Joseph Earle Moore, M.D., Baltimore, and Harry Eagle, M.D., Baltimore. J.A.M.A., July 26, 1941, Volume 117, Number 4, Pages 243-247.

Doctor Moore and Doctor Eagle have written this article because of the confusion resulting from the numerous technics of testing for syphilis. In 1935, the country's leading serologists participated in a conference for "The Evaluation of Serodiagnostic Tests For Syphilis in The U.S." It was hoped that as a result of this conference the excessive number of technics previously in use might be reduced to a few standard procedures suitable for general adoption and the long-sought standardization of serologic tests thereby furthered.

Unfortunately for this hope, not a few but many technics were found to give satisfactory results, and the group of tests appearing below were given tacit approval by the committee charged with the evaluation of the results. Approved Serologic Tests—Kolmer and Eagle modifications of the Wassermann technic; Kahn, Kline, Eagle and Hinton standard Flocculation tests; the Kahn presumptive and the Kline exclusion tests (supersensitive, for special purposes).

Since this meeting many other new modifications have been published and this veritable maze of proper names and plus marks leaves one and all completely befuddled, e.g. the following actual report on a patient with no clinical evidence or history of syphilitic infection:

Kline diagnostic	2 plus
Mazzini	2 plus
Kahn standard	Zero
Kahn verification	Zero
New York State Complement Fixation	4.7 units
Eagle Complement Fixation	Zone (003444300)
Eagle Macroflocculation	Positive
Kolmer	440
"Pallida"	Doubtful
Kline presumptive	4 plus
Kahn presumptive	4 plus

Thus, since standardization of technic is not now attainable, some order may be brought out of existing chaos by standardization in a simpler direction—that of reporting serologic results. Towards that end the authors recommend:

1. In the interests of simplicity, clarity and the best possible utilization of the laboratory data, it is therefore advised that the proper names now used in reporting serologic tests be replaced by the generic term "Serologic Tests for Syphilis" (abbreviated "STS").

2. By general agreement, the formal laboratory report to the physician should be made on an over-all, composite basis, simply as "Serologic Tests For Syphilis—Positive," "Serologic Tests For Syphilis—Doubtful," or "Serologic Tests For Syphilis—Negative."

3. The results of the individual tests, on which that over-all summation is based, may be given on the reverse of the serologic report.

4. Finally, and highly important, the serologic report slip should contain an informative statement as to the significance of this composite report.

UROLOGY

Edited by D. W. Branham, M. D.
502 Medical Arts Building, Oklahoma City

"Preliminary Report On the Use of Sulfapyridine and Sulfathiazole In Gonorrhea." Donald K. Hibbs, Alexander A. Day, Ruth W. Jung and J. Morrison Brady, Northwestern University Medical School, Chicago. The Journal of Urology, May 1941.

Experience with the use of sulfathiazole and sulfapyridine in the treatment of gonorrhea in the male are reported.

Both drugs are effective agents in the treatment of gonorrhea. Clinical symptoms of the cases followed through chemotherapy subsided earlier on sulfapyridine than on sulfathiazole. The percentage of failures was greater on sulfapyridine (17.5 per cent) than on sulfathiazole (5.26 per cent).

Toxicity judged by clinical manifestations in 378 cases and by blood and urine determinations in a limited number of cases indicate that sulfathiazole is much less toxic than sulfapyridine.

Poor patient co-operation probably accounts for the large number of lapsed cases. Lack of symptoms due to chemotherapy is suggested as the reason for this negligence.

"Diagnosis and Treatment Of the Venereal Diseases." Circular Letter Number 18, A.M.A. Journal, May 1941.

In the Medical Preparedness section of this issue of the Journal is an epitome of the recommendation from the Subcommittee on Venereal Diseases on the diagnosis and treatment advised for the five venereal diseases.

In a concise form it places before the doctor the salient facts as regards the treatment of these diseases; an outlined form if followed by the physician should promote a more effective quality of medical care for these cases. Of particular importance in this summary is the modern classification and nomenclature of the various phases of syphilis.

This classification must be used in order to report properly to this disease central authorities.

Every doctor who has the responsibility of venereal disease patients in his practice should carefully read this article.

TRY PABLUM ON YOUR VACATION

Vacations are too often a vacation from protective foods. For optimum benefits a vacation should furnish optimum nutrition as well as relaxation, yet actually this is the time when many persons go on a spree of refined carbohydrates. Pablum is a food that "goes good" on camping trips and at the same time supplies an abundance of calcium, phosphorus, iron and vitamins B1 (thiamine) and G (riboflavin). It can be prepared in a minute, without cooking, as a breakfast dish or used as a flour to increase the mineral and vitamin values of staple recipes. Packed dry, Pablum is light to carry, requires no refrigeration. Here are some delicious, easy-to-fix Pablum dishes for vacation meals:

Pablum Breakfast Croquettes

Beat three eggs, season with salt, and add all the Pablum the eggs will hold (about 2 cupfuls). Form into flat cakes and fry in bacon fat or other fat until brown. Serve with syrup, honey or jelly.

Pablum Salmon Croquettes

Mix 1 cup salmon with 1 cup Pablum and combine with 3 beaten eggs. Season, shape into cakes, and fry until brown. Serve with ketchup.

Pablum Meat Patties

Mix 1 cup Pablum and 1½ cups meat (diced or ground ham, cooked beef or chicken), add 1 cup milk or water and a beaten egg. Season, form into patties, and fry in fat.

Pablum Marmalade Whip

Mix 2/3 cup Pablum, ¼ cup marmalade, and ¼ cup water. Fold in 4 egg whites beaten until stiff and add 3 tablespoons chopped nuts.

Petrolagar*...

As a Bland Cleansing Enema

• The effect of a Petrolagar cleansing enema is to soften thoroughly the inspissated stool, and help establish a complete, comfortable bowel movement. Petrolagar serves this purpose well because it is miscible with water, a virtue that enables an even dissemination of minute oil globules throughout the residue in the colon.

The Petrolagar cleansing enema is preferable to irritating soap solutions in either the home or the hospital, because of its gentle, but thorough softening action.

Consider the routine use of the Petrolagar cleansing enema in the hospital, postoperatively or in obstetrical cases, where normal bowel habits are temporarily disturbed.

HOW TO USE: Mix 3 ounces of Petrolagar Plain with water sufficient to make one pint to one quart, as desired, and administer by gravity. For retention enema administer at body temperature.

*Petrolagar—The trademark of Petrolagar Laboratories, Inc., brand emulsion of mineral oil . . . Liquid petrolatum 65 c.c. emulsified with 0.4 gm. agar in a menstruum to make 100 cc.

Petrolagar Laboratories, Inc. • 8134 McCormick Boulevard • Chicago, Illinois

OFFICERS OF COUNTY SOCIETIES, 1941

★

COUNTY	PRESIDENT	SECRETARY	MEETING TIME
Alfalfa	H. E. Houston, Cherokee	L. T. Lancaster, Cherokee	Last Tues. Each 2nd Mo.
Atoka-Coal	J. B. Clark, Coalgate	J. S. Fulton, Atoka	
Beckham	H. K. Speed, Sayre	T. W. Pratt, Cheyenne	Second Tues, eve.
Blaine	L. R. Kirby, Okeene	W. F. Griffin, Watonga	
Bryan	J. T. Colwick, Durant	W. K. Haynie, Durant	Second Tues, eve.
Caddo	E. W. Hawkins, Carnegie	G. E. Haslam, Anadarko	
Canadian	P. F. Herod, El Reno	A. L. Johnson, El Reno	Subject to call
Carter	R. C. Sullivan, Ardmore	H. A. Higgins, Ardmore	
Cherokee	P. H. Medearis, Tahlequah	Isadore Dyer, Tahlequah	
Choctaw	C. H. Hale, Boswell	Floyd L. Waters, Hugo	
Cleveland	D. G. Willard, Norman	Phil Haddock, Norman	Thursday nights
Comanche	G. G. Downing, Lawton	Donald Angus, Lawton	
Cotton	Mollie Scism, Walters	R. M. Van Matre, Walters	Third Friday
Craig	Powell L. Hays, Vinita	Paul G. Sanger, Vinita	
Creek	P. K. Lewis, Sapulpa	Wm. P. Longmire, Jr., Sapulpa	
Custer	C. Doler, Clinton	W. C. Tisdal, Clinton	Third Tuesday
Garfield	V. R. Hamble, Enid	John R. Walker, Enid	4th Thursday
Garvin	Robert M. Alexander, Paoli	John R. Callaway, Pauls Valley	Wed. before 3rd Thur.
Grady	Turner Bynum, Chickasha	Roy E. Emanuel, Chickasha	3rd Thursday
Grant	I. V. Hardy, Medford	E. E. Lawson, Medford	
Greer	J. B. Lansden, Granite	J. B. Hollis, Mangum	
Harmon	Samuel W. Hopkins, Hollis	Wm. M. Yeargan, Hollis	1st Wednesday
Haskell	Wm. S. Carson, Keota	N. K. Williams, McCurtain	
Hughes	William L. Taylor, Holdenville	Imogene Mayfield, Holdenville	First Friday
Jackson	Raymond H. Fox, Altus	Willard D. Holt, Altus	Last Monday
Jefferson	D. B. Collins, Waurika	J. I. Hollingsworth, Waurika	
Kay	J. G. Ghormley, Blackwell	L. I. Wright, Blackwell	3rd Thursday
Kingfisher	F. C. Lattimore, Kingfisher	H. Violet Sturgeon, Hennessey	
Kiowa	J. M. Bonham, Hobart	J. L. Adams, Hobart	
Le Flore	G. R. Booth, Le Flore	Rush L. Wright, Potean	
Lincoln	J. W. Adams, Chandler	C. W. Robertson, Chandler	First Wednesday
Logan	Wm. C. Miller, Guthrie	J. L. LeHew, Jr., Guthrie	Last Tuesday evening
Marshall	John L. Holland, Madill	J. F. York, Madill	
Mayes	S. C. Rutherford, Locust Grove	E. H. Werling, Pryor	
McClain	B. W. Slover, Blanchard	R. L. Royster, Purcell	
McCurtain	R. D. Williams, Idabel	R. H. Sherrill, Broken Bow	4th Tues. eve.
McIntosh	D. E. Little, Eufaula	W. A. Tolleson, Eufaula	2nd Tuesday
Murray	P. V. Annadown, Sulphur	O. D. Thomas, Sulphur	
Muskogee	A. N. Earnest, Muskogee	S. D. Neely, Muskogee	1st & 3rd Monday
Noble	J. W. Francis, Perry	C. H. Cook, Perry	
Okfuskee	J. M. Pemberton, Okemah	L. J. Spickard, Okemah	2nd Monday
Oklahoma	George H. Garrison, Okla. City	W. W. Rucks, Jr., Okla. City	4th Tuesday
Okmulgee	I. W. Bollinger, Henryetta	M. D. Carnell, Okmulgee	2nd Monday
Osage	T. A. Ragan, Fairfax	George Hemphill, Pawhuska	2nd Monday
Ottawa	J. W. Craig, Miami	L. P. Hetherington, Miami	Last Thursday
Pawnee	M. L. Saddoris, Cleveland	Robert L. Browning, Pawnee	
Payne	A. B. Smith, Stillwater	Haskell Smith, Stillwater	3rd Thursday
Pittsburg	W. H. Kaeiser, McAlester	Edw. D. Greenberger, McAlester	3rd Friday
Pontotoc	E. M. Gullatt, Ada	R. E. Cowling, Ada	1st Wednesday
Pottawatomie	R. M. Anderson, Shawnee	Clinton Gallaher, Shawnee	1st & 3rd Saturday
Pushmataha	E. S. Patterson, Antlers	D. W. Connally, Antlers	
Rogers	W. A. Howard, Chelsea	P. S. Anderson, Claremore	1st Monday
Seminole	Claude S. Chambers, Seminole	Mack I. Shanholtz, Wewoka	
Stephens	E. C. Lindley, Duncan	John K. Coker, Duncan	
Texas	L. G. Blackmer, Hooker	Johnny A. Blue, Guymon	Subject to call
Tillman	T. F. Spurgeon, Frederick	O. G. Bacon, Frederick	
Tulsa	J. C. Brogden, Tulsa	Roy L. Smith, Tulsa	2nd & 4th Mon. Eve.
Wagoner	H. K. Riddle, Coweta	S. R. Bates, Wagoner	
Washington-Nowata	S. A. Lang, Nowata	J. V. Athey, Bartlesville	2nd Wednesday
Washita	A. S. Neal, Cordell	James F. McMurry, Sentinel	
Woods	C. A. Royer, Alva	O. E. Templin, Alva	Last Wednesday
Woodward	Joe L. Duer, Woodward	C. W. Tedrowe, Woodward	